CHEMICAL MARKETS

RUPERT C. WATSON
Managing Editor

WILLIAMS HAYNES, Publisher

ELMER F. SHEETS
Assistant Editor

VOLUME XXIII | ESTABLISHED 1914 | NUMBER 5

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Consulting Editors:

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BENJAMIN T. BROOKS
CHARLES R. DOWNS
WILLIAM M. GROSVENOR
ARTHUR D. LITTLE
CHARLES H. MACDOWELL
JOHN E. TEEPLE
T. B. WAGNER
MILTON C. WHITAKER
FRANK C. WHITMORE

Plant Management

In the interest of plant executives, managers and superintendents who are desirous of acquainting themselves with the every day work of plant administration which is going on in other organizations of the industry, we inaugurate with this issue a new department—Plant Management.

With all the technical information that is available, little or no space has heretofore been devoted to those problems which rank equally in importance with the laboratory developments. The scope of this department will be increased as conditions warrant. Suggestions and contributions will be given every consideration.

CHEMICAL MARKETS, INC., Publishers

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WILLIAMS HAYNES, PRESIDENT; ROBERT STRANGE, SECRETARY; D. O. HAYNES, JR., TREASURER

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There is no substitute for experience

MATHIESON
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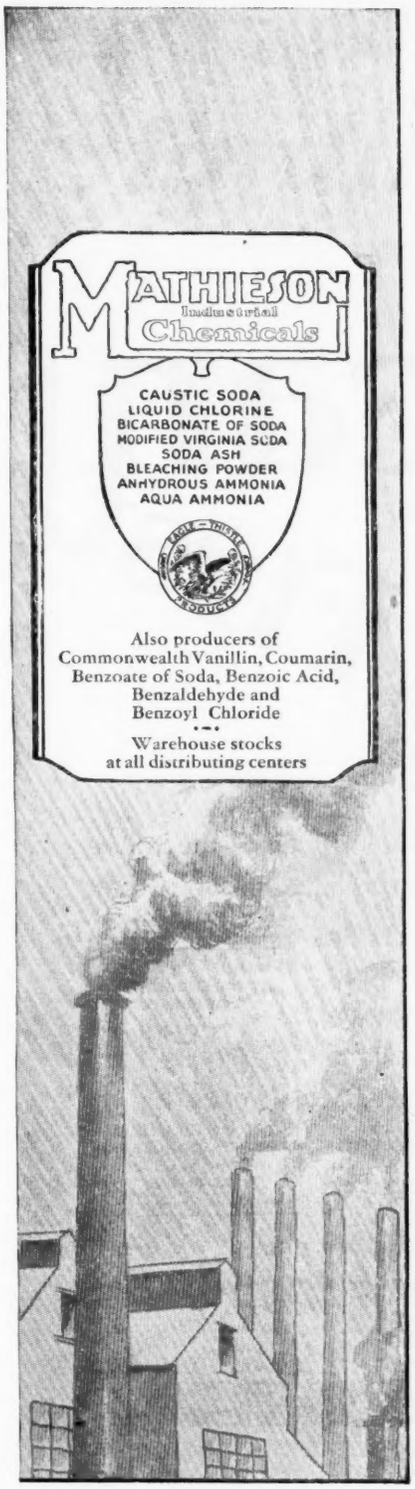

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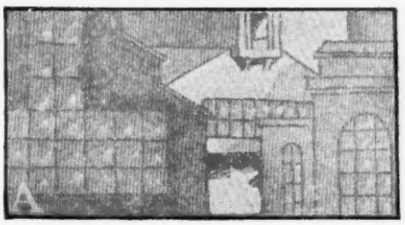

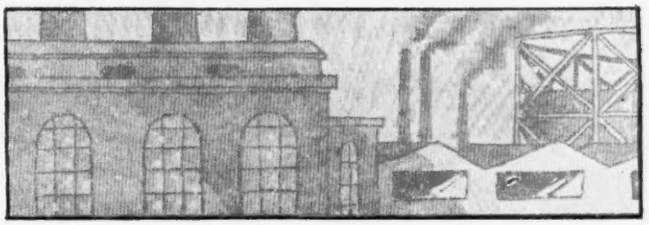

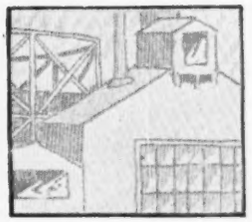

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AMERICAN can satisfy your every alcohol requirement. Several factors are responsible for the maintenance of this splendid service.

Physical assets and resources are amply adequate. They are represented by three producing plants, located on tidewater and in the great grain fields. To this advantage of situation is added another which directly results in an alcohol of exceptional purity . . . a distillation process developed in our laboratories and available to us exclusively.

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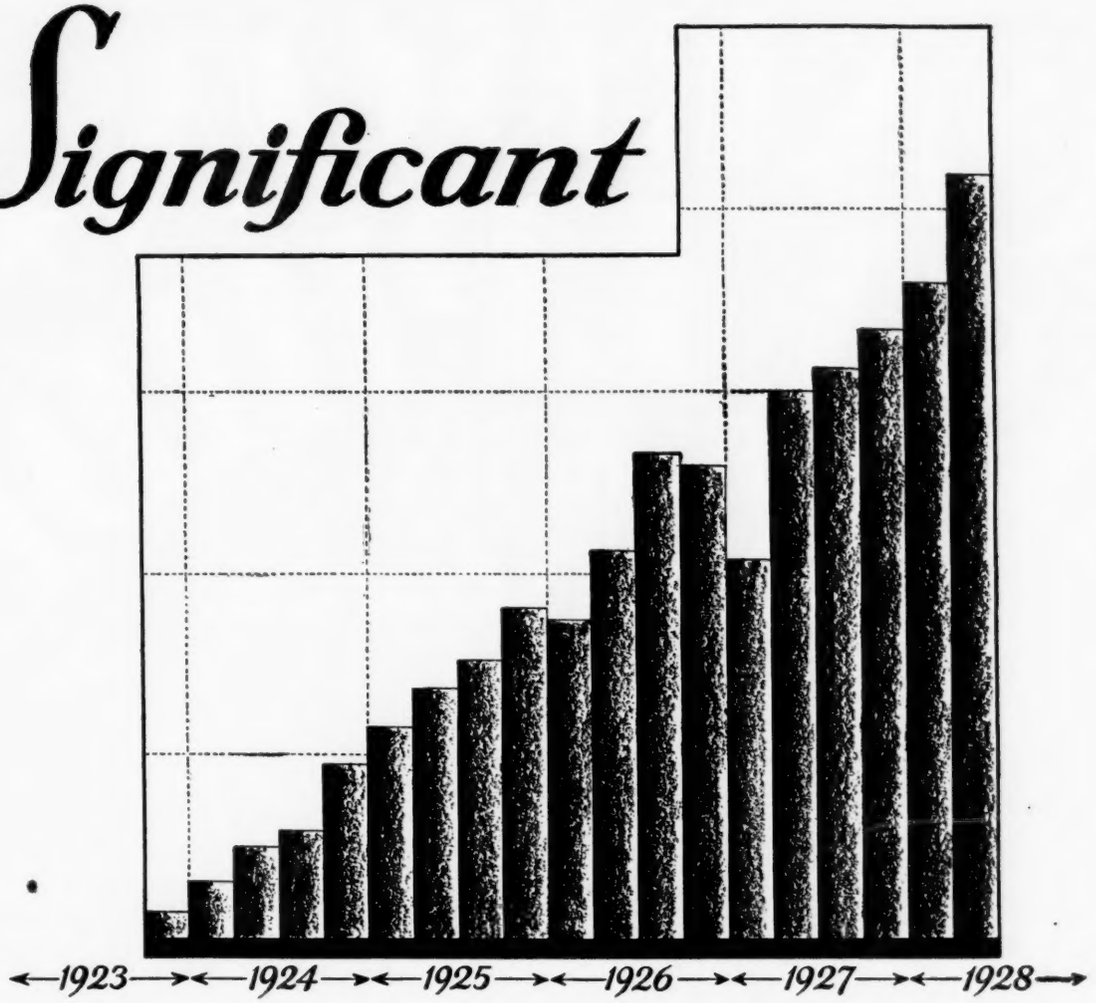
Significant



WHY DO KALBFLEISCH ROSIN SIZE SALES STEADILY GO UP?

THE most important O. K. is that of the buyer and user. That is why this chart of comparative sales of Kalbfleisch Rosin Size is interesting and *significant* to all paper mill executives.

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Akron, Ohio Representative : White & Company

★One of

Baker's

Dependable Chemicals

Announcement

WE wish to take this means of expressing our earnest and sincere appreciation to our good friends for the messages of sympathy which came to us by telephone, telegraph and mail from all sections of the country following our fire loss on Sunday, October 28th. We have been deeply touched by this manifestation of interest in our welfare and progress.

The fire occurred in our Plant No. 1. Plant No. 2 is located about one mile distant from Plant No. 1 and is operating as usual, taking care of the regular requirements of our customers, whether in accordance with schedules previously made up, or in connections with new orders calling for immediate shipment of any of our products.

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PUBLICKER INCORPORATED

CHEMICAL PRODUCTS DIVISION

Executive Offices
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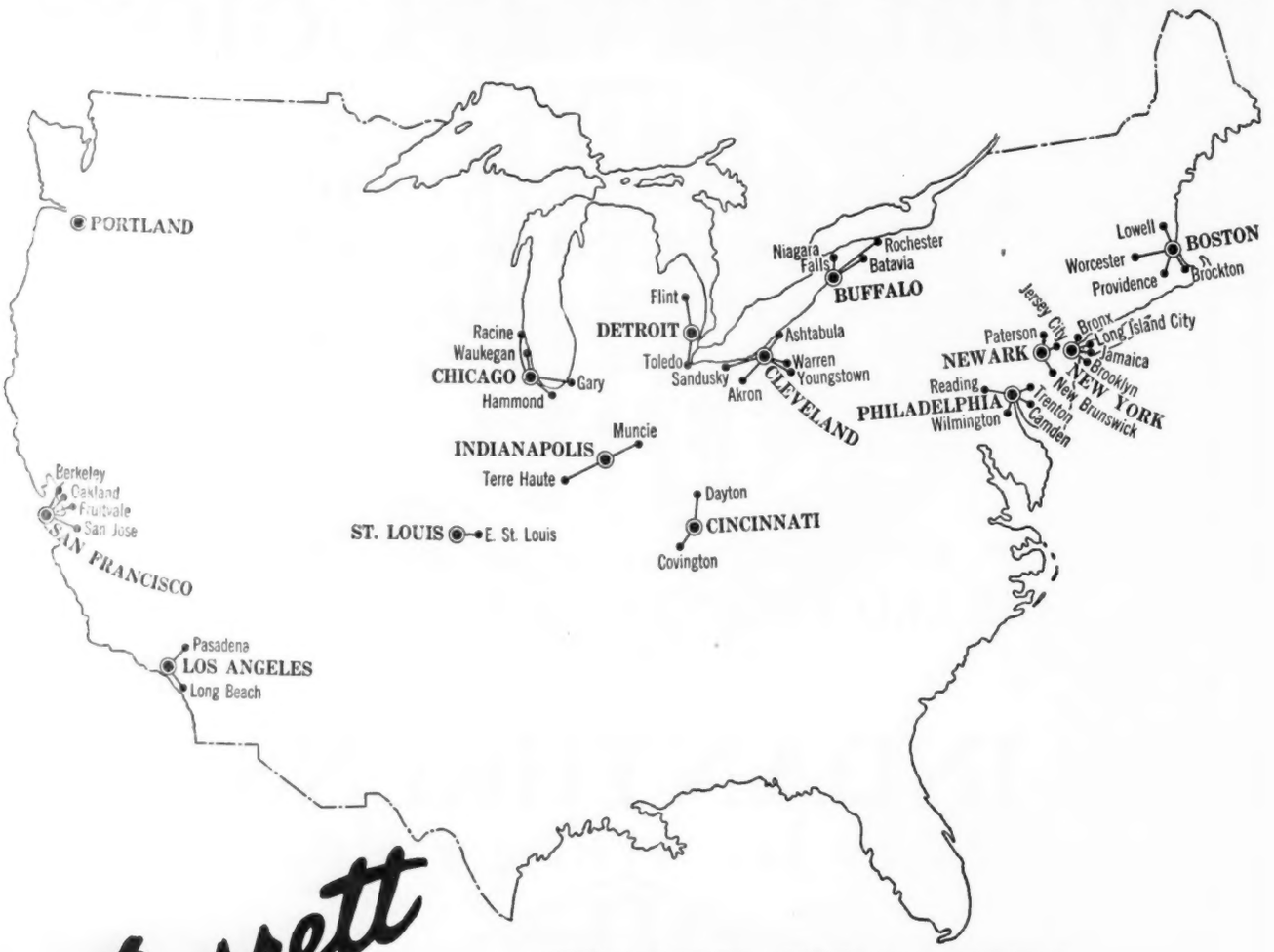
Coast to Coast Distributing Points



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Coast to Coast Producing Points

CHEMICAL MARKETS

VOL. XXIII. NOVEMBER, 1928 No. 5.

"Prepare for War"

NOT since the debacle of 1920, eight long years ago, has the chemical business of the country been in so healthy a state of activity and most branches of this highly ramified industry are flourishing. This is no false bloom for the roots are sound. This belated prosperity could not have come more opportunely. A brisk and busy autumn, during the contract season, is the very best guaranty of chemical commerce during the twelve months forward.

THE chemical industry therefore, is presented with a golden opportunity to consolidate its position by destroying evils that undermine the very foundations of our chemical distributing system. If this splendid chance is not grasped and wisely utilized to put chemical marketing firmly upon a solid basis of sound and progressive economics, this mistake will surely cost the industry dear and there is no surety when such an opportunity will promptly return. On the other hand, less favorable conditions are certain to come, and in business it is elementary strategy to prepare for bad times during good times.

COMPETITION that centers upon price is the cause of most evils that attend chemical sales. Selling at a price is a potent breeder of distrust among competitors and of suspicion among consumers. It results in haggling; it promotes sharp practice; it cuts prices. Furthermore it sacrifices true service to customers and it destroys real and legitimate salesmanship. Finally it puts consumers on an uneven basis for the cost of their chemical raw materials and it writes red figures in many a seller's books.

DEEP-ROOTED as this evil is in chemical trade customs; pernicious and far-reaching as its destructive effects have become, nevertheless it has a single, sure, simple cure. On another page you may read the symptoms and the remedy set forth plainly, by the very easy expedient of substituting the word "chemicals" for the word "steel" in the address of Charles M. Schwab.

AS in the steel industry, so in the chemical industry, conditions are ripe for this reform. Weak sellers in a sloppy market can never modernize our sales methods. Now, however, consolidations have reduced the number of selling factors; demand begins to approximate supply; chemical prices are firm. What we lack is great leadership—a Schwab and a Steel Corporation. Who will fill the breach ?

Patent Rights

A bill giving to Government scientific and technical employees the right to patent in their own names and for their personal benefit any discoveries or inventions which they may make was passed during the last session of Congress. This legislation, posing rather grandiloquently as a "restoration of private rights to citizens", is in effect the abrogation on the part of the Government as its contract rights in the discoveries made by its employees, paid out of public funds, working in public laboratories, with public equipment and supplies.

Since the patents of Government employees have in the past always been dedicated to the public this law is of concern to the entire people. Unfortunately this subject of patent rights is not one that catches the popular attention. Even in the chemical industry, where all of the production activities are so vitally inter-meshed with patents covering apparatus, processes, and even products, this law has been curiously ignored by the executives. It has, however, been widely and eagerly discussed in technical circles where its importance is immediately recognized and where all of its implications and possible effects have been clearly foreseen. These implications and effects deserve the immediate and very serious consideration of executives.

It would be most illuminating, if it were possible to trace out through all the torturous channels of legislative and bureaucratic Washington the real source of this significant law. Obviously it is not the child of any brain in Congress. Who inspired it, who furthered it, and by what means it was so swiftly and silently passed through the legislative mill would reveal much as to the methods employed by bureaucracy to further its own ends in a democratic government. This is a dangerous tendency in our political life which is progressing at a disconcerting rate. Not for long can this encroachment of government bureaus and government commissions upon the rights of the public proceed much further and continue to escape popular attention.

Furthermore this law sets a public precedence for private affairs. It will be so used, and contracts of employment with chemists and engineers engaged for research work will have to be very specific in their definition of patent rights unless grevious misunderstandings are to arise. This is an involved and highly technical subject upon which the executive will do well to rely only upon the most competent legal advice. Even existing contracts should be scrupulously re-read in the light of this new law and the implications which may be drawn from its terms.

"Out of the Red"

Those charged with keeping the balance sheet of any chemical enterprise in black figures to-day are ground between two mill stones. Chemical selling prices have dropped to only about ten per cent. above the pre-war average of the group, while the index price of all commodities stands at over fifty per cent. higher than 1914.

An over-production variously estimated at from a third to a half in excess of our chemical requirements; a demand that from the very nature of the industrial uses of chemicals for further manufacturing is inelastic and not to be expanded by any direct effort of chemical makers; a world wide economic situation that historically promises a long period of constantly lowering prices—are three factors that do not make easier the solving of the fundamental problem of favorably balancing costs and sales prices. The prospect would be as gloomy as the Styx, were it not for the various escapes offered by technical advance. Research, far from being a bugaboo to scare timid investors, destroyer of dividends, the anarchist of industrial operation, is the best friend, the wisest counsellor, the most valuable aide of the chemical industrialist.

Greater yields, purer products, less depreciation, apparatus that saves labor or power or materials—in a word, more efficient plant operation on the one side, and on the other, broader markets found by discovering new uses for old chemicals or new chemicals, are the secret to-day of keeping the chemical company's books out of the red.

To the solution of the industry's problems by these technical methods executives can make a valuable contribution. They are not so close to the plant that they trip over the feed pipes. Instinctively, they translate processes and products into commercial terms. Their very lack of technical training gives their viewpoint a breadth and freshness that is invaluable. To turn a good executive into a poor chemist is highly wasteful, but production and distribution have their economic as well as their technical problems; and it is even more foolish not to draw upon his experience, judgment, and vision in these business aspects of plant administration.

These reasons have prompted us to add a new department to CHEMICAL MARKETS devoted to plant management problems.

Throughout our pages, we shall specialize in economic subjects and discuss them in business terms. But this field is a broad one, quite untilled as yet, and should yield a valuable crop of stimulating suggestions and practical experience.

Color in Chemicals

Sky-blue coffee pots; scarlet bed linen; bath tubs of yellow, green, pink and purple; motor cars of every shade from white to black; blue shoes for the ladies and lavender vests for men—color in the home, on the street, at the office, all are manifestations of the craze for color. This riot of tints and hues, which was largely made possible in the first instance by the lacquer branch of the chemical industry, has created real business problems which have been seriously discussed in a recent issue of *Nation's Business*. This would appear to be a problem far from chemical fields, and fertilizers of all chemicals would seem to be farthest from this latest fad of Dame Fashion. But read what H. A. Vernay, executive in charge of a "V-C" subsidiary has to say:

"Even in our business the question of color does receive some consideration as there are certain sections of the country that prefer light colored fertilizers and other sections that prefer dark colored ones, even though the analysis may be exactly the same in both cases. Another matter which is receiving attention is the fact that it is now possible to print fertilizer bags in two colors at the same time, and we are finding that generally speaking a bag of fertilizer printed, say, part in red and part in black will be taken by a farmer in preference to one printed all in solid black."

Would an industrial purchasing agent be less susceptible to the color appeal than a farmer? Probably not, and already the use of color in chemical advertising and to emphasize and identify trade-marks and brands on drums, barrels, boxes, and bottles, as well as bags, gains favor rapidly. Do light and dark fertilizer forecast tinted chemicals for finicky buyers? It is hard to picture apple green caustic or lilac bichromate—but, wait a moment, we already have acetylsalisylic acid offered in blue, green and pink!

Headed by the recently announced Du Pont-Grasselli merger, October has been very productive of consolidations, near mergers and rumors of still further combinations within the chemical industry. In addition to the Du Pont-Grasselli combine, another consolidation in the alcohol industry has neared completion during the month, and may be now an actuality, though no announcement has been made. Another deal consummated—the Monsanto purchase of the entire stock of Graesser - Monsanto in Wales — while not looked on in the light of a merger, nevertheless indicates that the seed of combining has been sown in this country.

At about this time last year, the American chemical industry was agog at the speed and dexterity with which our chemical brethren in Germany, France and England formed powerful organizations. These were described in this country as machines designed to spell the doom of American business in foreign lands, and even to cripple the industry within our own borders. To date neither of these dire predictions has transpired, but the furor created has had the effect of awakening American industry to the advantages gained by large scale production, with the result that a good deal of thought is being given to similar moves in this country, which do not run afoul of the Sherman Anti-Trust Law.

Strange as it may seem to some people, the wrath of the Department of Justice did not descend on the principals in the Du Pont-Grasselli deal, and now that this consolidation has been put through, others equally beneficial to sellers and buyers alike will probably follow.

CAME THE DAWN

They Say:---

The most ominous problems which I see are those which appear to have resulted from the general loss of balance between production and distribution. Of practically all commodities which America can produce, it is producing regularly from 15 to 30 per cent. more than it has the capacity and power to consume and dispose of profitably in other available markets. —*John J. Edgerton.*

The business that expects to continue to be maintained at the old stand through several decades and generations will generally be found equipped with suitable research and control laboratories, and to have a definite, established research policy, which is being pursued regardless of transitory business conditions. —*Industrial & Engineering Chemistry.*

Any company which does not adopt a policy of research in its business may as well set the date of its liquidation. I believe that in research is the answer to competition that is increasing every day. We find it is our best weapon, both for defense and offense.—*Charles Belknap, President, Merrimac Chemical Company.*

It is difficult to find an industry that, in some way, is not organized to take advantage of chemistry as applied to its affairs. The degree of the effort may vary; but the beginnings have been made or are up for consideration.—*Canadian Chemistry and Metallurgy.*

If woman by her vote does anything to break down the American standard of living, she will suffer, no matter who she is; if she helps to maintain that standard, she and her children will benefit all the more.—*A. Cressy Morrison.*

No one will deny that the maintenance by each producer of any basic commodity of substantially uniform prices, at a proper level, is a desirable thing not only for the producers but also for the consumers. —*Charles M. Schwab.*

Our whole economic system has been adjusted to operation under a protective tariff, and it surely is not an opportune time to change the base to which we are adjusted.—*W. R. Phemister, Treasurer, Monsanto Chemical Works.*

Success in an executive position is the result of the correct determination of relative values.—*F. J. H. Kracke, Appraiser, Port of New York.*

A good way to kill a project is to put it in the hands of a large committee.—*Bagology.*

The trend of the chemical industries is toward the South. The crest of the wave is right now in Virginia and West Virginia. One needs only to travel from Hopewell, Va., westward and through the Kanawha Valley in West Virginia to see this wonderful and very recent development. Nitrogen fixation; rayon; paper; caustic soda; chlorine; refractories; glass; products from natural gas; barium compounds; synthetic organic chemical compounds—and most of these products are being manufactured from cheap raw materials.—*Charles H. Herty.*

Ten Years Ago

From "Drug and Chemical Markets" November 1918

Nitrate of soda deliveries for use of trade to be started, according to report from Washington. Statement is taken to mean that deliveries will be kept up thereafter, Government necessities having been greatly reduced by ending of war.

Marden, Orth & Hastings Corporation consolidates its various subsidiaries at new headquarters, 136 Liberty Street. New offices of the companies under control of Marden, Orth & Hastings Corporation will be at same address.

Dyestuff and textile manufacturers meet at Waldorf-Astoria to discuss question of limiting number of shades and colors in use in various industries. Decision to standardize 128 colors out of 5,000 manufactured is reached.

Proposed abandonment of construction of nitrates plant at Ancor causes considerable stir in Cincinnati business circles, with strong movement on foot to induce authorities to complete plant for private industrial purposes.

War Department authorizes construction of sulfuric acid plant at Grand Rapids. Work of erecting and equipping to be done by construction division of army and expected to cost $1,500,000.

C. A. Grasselli, head of the Grasselli Chemical Co. gives residence in Cleveland to the Cleveland Society for the Blind; the home to be turned into an industrial school for blind Cleveland soldiers.

Capote Nitrate Co., San Antonio, Tex., incorporated with $100,000 capital, plans establishment of works for production of nitrate of potash, sodium nitrate and other specialties.

Air Nitrates Corporation's construction of new plant at Ancro is commenced and estimated to cost $20,000,000. It is to be devoted exclusively to Government contracts.

New Government nitrate plant No. 2, at Muscle Shoals, near Florence, Ala., is formally turned over to the Ordnance Department of the army.

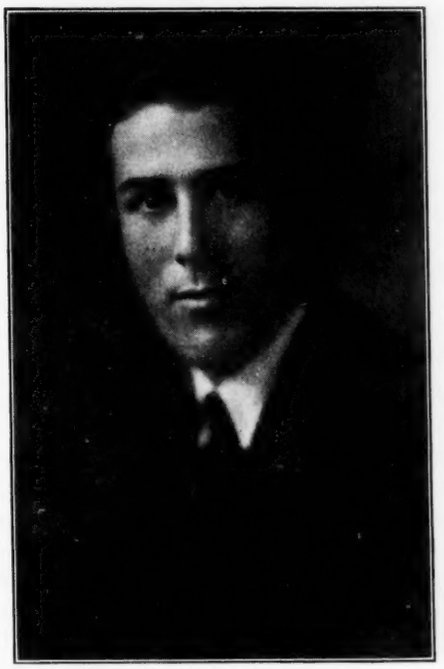
E. I. du Pont de Nemours & Co.'s smokeless powder plants are closed for purpose of readjustment to meet requirements of Dyestuff Dept.

United States Government turns over to Hercules Powder Co. the control of big explosive plant at Nitro, W. Va.

The Chemical Industry Can Gain *Strong Financial Support* Through Cooperation

By Theodore M. Switz
Investment Research Corporation

THE germ of a new chemical process lies sprouting in the research laboratory and small-scale plant for years; then almost overnight it seems to blossom to a position of economic importance. The rayon industry, for example, developed slowly for forty years; then, within the last few years it became the country's third most important textile industry. The seed of the investment trust idea was likewise planted long ago, but economic conditions in the United States have recently become more and more favorable to its growth. The sudden expansion of the last five years was indicated in a recent speech by the Chairman of the House Committee on Banking and Currency, Louis T. McFadden, who said that there are now more than 150 investment trusts with total resources of over $800,000,000. They are a new factor in the financial world, and a new partner in industry.



Citing the present day trend toward exchange of ideas and processes in research as an example, Mr. Switz predicts equally beneficial results from the "open and above board" type of annual financial statement which is gradually finding a place in our commercial life.

As described in a previous article, these trusts are large aggregations of small bits of capital — from less than a hundred dollars and up—in the hands of experts whose sole job is to know the fundamentals of current financial and economic conditions, to know the earning power and specific problems of good companies, and to invest accordingly. They are guided more by facts and less by emotions than is the small investor, while they are unable to gamble and take the chances that a single wealthy individual can. Diversification of security holdings, although an important part of their policy, is not enough to guarantee successful operations. They must know each individual situation before an investment is made. At the same time that small investors have been organizing themselves into these large cooperative groups, American industry has gone through an unprecedented era of combination. The day of the small company owned and operated by an individual or with the aid of his family and friends is practically over. The capital requirements of a corporation large enough to function effectively in the modern period are so large that the organizers frequently have to go outside their own circle and invite the public to support the venture through stock owner-ship. This method may bring certain embarrassments to the management in its wake, such as the very large stockholder who seeks to gain control of the company, or at least to have a representative on the board of directors and say in the determination of policies, and also the speculators who have little knowledge of, or interest in, the company, but who boost or depress the price of, its stock with every idle rumor. Furthermore, in recent years several large companies have been seriously hampered in carrying through vitally necessary refinancing or reorganization by the legal opposition of obstinate and ill-formed stockholders. What a different picture the investment trust presents! Although large they do not seek control to companies, for their business is investment, not managing or manufacturing. Since they really know the problems of industries and companies and are interested in the long-term pull rather than a quick turnover, they are practically unaffected by rumors and for the same reason

they can be of considerable assistance to a management anxious to make constructive changes in the face of opposition.

Considering the size and importance of the chemical industry in the American economic structure, it would seem that chemical companies, with a few notable exceptions, have had difficulty in obtaining adequate financial backing. One important reason for this has been the lack of understanding of the industry's problems by investors and financial interests, and this in turn has been largely caused by an undue reticence on the part of the industry in taking the investing public into its confidence.

Research is Transforming Industry

Years ago the policy of all industries was to be very secretive not only about financial matters, but about technology and manufacturing processes as well. Secret processes were the order of the day, and rule-of-thumb methods triumphed. Then the chemical industry began to develop the industrial research laboratory and slowly the outlook changed. Plants began to admit visitors. Many "secret" processes were found to be unscientific and not worth having. The exchange of ideas was stimulating to everyone concerned and manufacturing became more efficient. Research studies in technology or pure science from the industrial laboratories were published in ever greater numbers as may be seen from the growing size of the publications of the American Chemical Society. And all this study and publicity, which would have been considered suicidal two decades ago, has led to larger profits than have ever been known before. In fact, it has almost become axiomatic that the secretive company is the backward and unprogressive company. The trend toward greater frankness and co-operation is evident throughout all industry, and typical examples are the Alcohol, Rubber, and Sugar Institutes — trade associations which have greatly benefited their members in merchandising, advertising, and in avoiding over-production, etc.

Profit and Loss Accounts Baffling

Meanwhile, profit and loss accounts remain an investor's No Man's Land! Get through them if you can! Intelligent investors realize, nevertheless, that good chemical companies offer excellent possibilities for investment; first, because the chemical industry is growing steadily and some sections of it even rapidly; second, because it is a basis industry with a good future; and third, because some companies are interested in so many products and industries as to possess greatly stabilized earning power.

Let us consider some of the typical difficulties encountered in studying a chemical company. Perhaps one of the most annoying is to find that a company which is well-managed, well-located with regard to raw materials and markets, with a good line of products and an active research organization, does not publish any financial statements whatsoever, although its stock is listed and traded in on a recognized stock exchange. There are several companies in this group, some of which have a national reputation. Part of their reticence is no doubt due to the influence of their founders who were bred in a different generation. But in general, when a firm which has some public support fails to publish an income statement, one always wonders why. Is it because the earnings are very bad? Bad news cannot be bottled up forever. Are the earnings exceedingly good, and the officers taking advantage of their knowledge to speculate in the stock? Such are the questions that run through one's mind. The same questions run through the speculator's mind and give him an opportunity to circulate favorable or unfavorable rumors. The stocks that become the footballs of Wall Street are almost always those of companies who feel that they should tell their partners as little as possible.

Suppose the stock of a mining company is under consideration. Several years ago the company published an official statement of its deposits. Dividing by the annual production, the ore should have given out completely by this time, yet the company is still operating successfully. No corrected statement of reserves has ever been published. What is the investor to think? This case is perfectly typical of what occurs far too often.

Annual Reports Incomplete

In the case of a well-known company whose assets run into the millions, the annual report states that "the directors believe that special comment in regard to the year's operations is unnecessary, since the balance sheet and income account as presented make it possible for stockholders to readily visualize the company's progress during the year". An examination of the *consolidated* income account is found to consist of three items; gross income, federal taxes, and net income. Surely their stockholders must be extraordinarily intelligent!

An important company in the organic chemical field publishes in its annual report a fairly adequate analysis of its profit and loss account. But the account is consolidated, and includes the earnings of several important subsidiaries, thus making it almost impossible to determine whether the company has measured up to the opportunities presented by the economic conditions existing in the various phases of the industry during the year. Yet when the stock of this company was listed on the New York Stock Exchange, a detailed analysis of the company's assets and operations was furnished. Why is the company willing to tell the Committee on Stock List of the Exchange more than it is willing to tell its own stockholders in the annual report?

On the other hand, the annual report of one of the oldest and most distinguished chemical companies in America gives a brief outline of the economic

factors which have affected each of its chief products, although only in a rough qualitative way. Such a report, although it is far from being really complete, is outstanding in the chemical industrv today.

In this day of large consolidations, one of the biggest improvements that could be made in annual reports would be the publication of the balance sheets and profit and loss accounts of at least the important subsidiary companies, in addition to the consolidated statement. Such information is really due to stockholders, for otherwise they cannot get even an approximate idea of the condition of their property or of its prospects for the future. In the days before consolidation began there were only a few companies whose operations were so complex that a simple statement of gross and net income was insufficient. Today almost every company of any importance is so diversified that there may be prosperity in one section of its business, and stagnation or depression in another. Financial statements should keep pace with the advances in business organization!

Chemical Industry Diversified

There are few companies, except perhaps the great electrical equipment manufacturers, whose business is as highly diversified as even the average chemical company. There are different raw materials, different methods of manufacture and of distribution, and widely different types of consuming market for each chemical product. Moreover, it is not infrequent for a company to make from fifty to a hundred different products, and yet obtain say 80% of its income from one or two. Under such conditions, it is very difficult for the prospective investor to analyze either the company's past or its possibilities for the future. Surely reticence on this subject cannot be justified on the grounds that the publication of such information in the annual report would help the company's competitors, for anyone in the trade usually has a far greater knowledge of his competitor's business than would be needed to satisfy the most curious and inquisitive stockholder. Would it be harmful to publish the approximate income produced by various products, or at least groups of related products?

Another item that would greatly improve the annual reports of chemical companies (and many other companies as well) would be the general adoption of the practice of publishing the total *sales* for the year. This is particularly important in making an economic analysis of a company, for total sales bear a direct relation to both volume of production and the wholesale price of the commodities in question. Figures for gross and net income which are given by so many companies are not nearly so helpful, because they are not at all comparable as a result of wide variations in accounting policy. Items which are particularly likely to cause confusion are depreciation and obsolescense, repairs and renewals, gain or loss on inventories, and state and local taxes. If firms like Montgomery Ward and Sears Roebuck can publish their total sales *monthly* and still be outstandingly successful, is it likely that the *annual* publication of sales figures will bring ruin and disaster to chemical companies?

In view of the growing practice of companies to maintain certain investment holdings of the stock of companies operating in other industries, it is important that net income from the company's own operations be reported, and not consolidated with income from investments.

More Comprehensive Reports

In addition to the specific items mentioned above, the annual reports of chemical companies could be made much more valuable if they were developed from one or two pages giving only a few consolidated and disguised key figures, into a full but concise discussion of the company's operating problems, and particularly of the economic factors which have affected or are likely to affect earnings. For instance, it would be worth while to analyze the factors which have affected the cost of raw materials such as molasses or corn or coal-tar products, and to describe the changes that have taken place in the consuming industries. If carefully prepared such as economic analysis would be of value not only to the stockholders, but to some of the company executives themselves, for it would give a broad-gauged picture of the entire situation, such as can be achieved only with great difficulty by the executive who spends all his time in problems of production, sales, research, purchasing, or finance.

The Ideal Financial Report

Perhaps this sounds like a pipe dream. But there are at least two companies at the present time which are carrying these ideas into practice — the Diamond Match Company and the American Sugar Refining Company. Their annual reports are not only informative and complete, but they make fascinating reading as well. Both may be recommended as models to chemical companies, with Diamond Match considered as outstanding in its analysis of the company's own operations, while American Sugar is remarkable for its thorough and capable study of the economics of the sugar industry, in addition to a careful statement of its own progress. *Both reports are over forty pages long.* The Diamond Match report shows the various sources of the company's income, analyzes the inventories of matches, material and supplies of lumber and logs and of standing timber and compares them in a series of excellent statistical tables with those of previous years. It gives a quantitative idea of changes in manufacturing costs, and information concerning the trend of prices. The competitive situation is described, and also the efforts of the company to stabilize the match market. There is of course such general news of the industry as is necessary to form a background in considering

the company's position. An exceptionally large part of the report is given over to an analysis of the items in the balance sheet which is so clear that even a layman can understand it.

The American Sugar report contains a series of economic charts showing graphically, for instance, raw and refined sugar prices for the last 27 years; Cuban, American, European and world production of sugar since before the war; a diagram of the sources of sugar consumed in the United States; total American consumption; and stocks and exports. It also gives abstracts of all the recent Cuban and American legislation likely to affect the profits of sugar companies, and shows summaries of the conclusions regarding the future published in previous copies of the annual reports. Under such headings as "Present Excess Production in Cuba and 50% Excess Refining Capacity in the United States Result of War Effort" and "Export Business in Refined Sugar from the United States Now Depends Upon the Policy of the Cuban Government" it discusses some of the major problems of the industry.

Indeed, after reading reports such as these, the stockholder not only has a knowledge of his company's condition and progress, but also a pleasant feeling of co-operation with, and confidence in the officers.

Trusts Must Be Cautious

Investment trusts are constantly seeking for places to invest their funds but must be cautious and must know facts. As they grow in size and number their support will be increasingly advantageous to companies which are frank in their financial statements. The chemical industry has led in the organization of industrial research and the publication of careful scientific studies of its processes. Will it lead in the publication in its annual reports of complete and farseeing economic and financial analyses of its operations? The former proved profitable; the latter may prove even more so.

At a recent stockholders' meeting of Rhenania-Kunheim A. G., Berlin, and Kaliwerke Neustassfurt-Friedrichshall A. G., Hanover, it was decided to merge these two enterprises and call the fushion Kali-Chemie, A. G., according to Trade Commissioner William T. Daugherty, Berlin. Rhenania-Kunheim is capitalized at 10,000,000 marks; Neustassfurt, at 19,500,000 marks. The latter exchanges shares with Rhenania-Kunheim on a 1:1 basis and raises capital initially to 29,500,000 marks, to which a subsequent increase of 2,500,000 marks will be applied. This merger involving the well-known Rhenania-Kunheim Co. that has had a questionable era of prosperity in postwar years, especially in competition with the I. G., would indicate plans to enter the mixed fertilizer business. Rhenania-Kunheim features in its heavy chemicals production, so-called Rhenania phosphate, while Neustassfurt is a potash concern, employing electrolytic refining processes. At its general meeting, it was mentioned that plans may be envisaged to erect a potassium carbonate plant, but that these plans are by no means mature as yet.

Italian Chemical Industry Now of International Fame Says Comm'r

Italy's chemical industry has advanced during recent years to a position of international prominence, according to Assistant Trade Commissioner Miss Elizabeth Humes, Rome. This development has occurred in the face of the fact that the country is absolutely lacking in coal and, with the exception of salt and sulfur, has practically none of the basic materials entering into chemical manufacture. One of the outstanding factors in the progress of the industry has undoubtedly been the encouragement given it by the Italian Government which has taken the form of protective legislation, encouragement of scientific research and in some cases subsidies.

The advance of the chemical industry in Italy since the war is indicated by the increase in the number of companies making chemical or allied products. In 1913, these numbered about 220 while in 1927 the number of companies reported was more than 700. It is impossible to state the production of these establishments in terms of value but according to official returns the output of chemical plants and those making allied products amounted in 1926 to nearly four million tons. Seventy-five per cent. of this production represented bulk commodities such as fertilizers and sulfuric acid.

Italian foreign trade in chemicals, the report shows, has kept pace with domestic production. In 1927 the value of this trade was $75,000,000, a substantial increase over the prewar figure. Both imports and exports of chemicals have increased in value since prewar times, the year 1927 showing a gain of nearly $4,000,000 for the former and $6,000,000 for the latter. Exports it is pointed out, would have made an even better showing had it not been for the loss of important sulfur markets. It is not probable, however, that Italy will be able to correct its adverse trade balance in chemicals and allied products in the near future owing to the fact that it must import large quantities of phosphate rock for its fertilizer industry and coal tar crudes and naval stores for its paint and varnish manufacture.

Germany and France between them supply practically one-half of Italy's requirements of chemicals and allied products while Great Britain is her chief customer for these lines. American products represent about five per cent. of total Italian imports while the United States in turn takes about eight per cent. of Italy's foreign shipments.

The movement going on in Europe looking to the formation of an international chemical cartel is being deliberately fostered in Italy. When this development comes to pass, the report declares, it seems certain that due consideration will be given to the Italian industry.

The suitability of wax extract from coal tar produced in the low temperature carbonization of coal for use as a base in the manufacture of colored wax crayons is being investigated at the Pittsburgh Experiment Station of the Bureau of Mines. Several commercial colored crayons have been analyzed and similar crayons have been made up using the tax wax. From experiments so far made this wax appears very well suited to the purpose. It has a high melting point, which doubtless will render its use advantageous in making crayons for particular purposes.

August production of crude methanol based on reports by the entire industry to the Department of Commerce amounted to 499,619 gallons, as compared with 518,220 gallons in July and 574,710 gallons in 1927. The output of acetate of lime during August amounted to 9,230,317 pounds, compared with 9,340,152 pounds in July and 13,124,634 pounds in August, 1927.

A new factory for the manufacture of carbon dioxide and white lead and other chemical products is being built by Gronberg and Co., at Dickersby, near Helsingfors, Finland. The share capital is 3,600,000 marks, according to Commercial Attache Frederick B. Lyon, Helsingfors.

CHARLES M. SCHWAB

talks on

*A Single Price for All**

IF YOU buy any article of merchandise in a department store you know that you are paying substantially the same price that any other purchaser on the same day will pay, and that it is useless for you to discuss the price with the clerk, for it will not be changed. The department stores long ago learned the economic necessity of maintaining a single price open to all.

The steel industry has never learned this, or, if it has learned it, has forgotten it, and instead of charging a single price open to all, we in the steel industry have been charging many prices, often quoting different customers different prices for the same products on the same day. Such a policy has resulted, and will inevitably result, in harming certain of our customers through price discrimination, and in hurting ourselves by inviting our customers to haggle over prices and by tempting them even to misrepresent the prices charged by our competitors in the hope of coaxing lower prices from us.

Practically every point stressed by Mr. Schwab in his address before the Steel Institute is equally applicable to our own industry. The steel magnate believes that we are approaching the desired level in industrial barter.

Now discrimination, as between customers, in prices which reflect merely differences in tonnages or differences in the character of service demanded by our customers are entirely proper. But there are other forms of discrimination in price based upon considerations less defensible. It is obvious that in as much as steel is so heavy a product, and the freight rate on a long haul bears so important an influence upon the final cost, that it is advantageous to consumers and economical to the industry that in the great majority of cases the product should be supplied at a fair price from the nearest available plant. For a manufacturer a considerable distance away to underbid the fair price offered by the nearby plant is obviously uneconomical and tends to indiscriminating price cutting and to cross hauling, an unwise practice of our industry to which I referred at some length in my talk last May.

No one will deny that the maintenance by each producer of any basic commodity of substantially uniform prices, at a proper level, is a desirable thing not only for the producers but also for the consumers. Fluctuating prices compel the consumers to speculate on the cost of their raw materials. Such stabilization of prices is entirely possible of attainment without agreement or collusion on the part of the producers. It requires merely a general recognition by the producers of two simple facts, viz: First, the steel business is unlike many other industries in that, within certain limits, the demand for steel products is not appreciably affected by the general price level, and, therefore, a general reduction in prices for steel products alone does not result materially in increasing demand; and second, it is not possible in a basic industry like ours to make effective for long at any one point two different prices for the same commodity. When one producer lowers his prices for a particular commodity, that price will promptly be met by his competitors. The net result in the long run is that such producer continues to produce substantially the same percentage of the total tonnage as before, but with a smaller profit margin and sometimes none at all.

It is now a certainty that 1928 will establish a new record in volume of production for the steel industry of the country. In so far as an increase in demand is the solution of our economic difficulties we are nearer to a proper relationship between supply and demand than we have been since the end of the war. This increase in demand has resulted, as should be expected, in a betterment of prices, virtually the first

**Extract from address before American Iron and Steel Institute, Hotel Commodore, New York, October, 1928.*

improvement that has occurred in five years. I hope and believe that there will be a still greater improvement in prices sufficient to afford to the industry a return upon its investment fairly comparable to that realized by other leading industries.

But, once a fair price basis is established, how long will it continue ? As long, I say, as the proper relationship between supply and demand is maintained. The folly of indiscriminate price cutting, though recognized by all, is a phenomenon which accompanies low operating rates, and, although much can be said to emphasize its evil results, it would be idle to expect to eliminate it altogether in periods of slack demand merely by the preaching of economic truths. There are always individuals who are short-sighted enough to believe that they can, by price cutting, secure an advantage peculiar to themselves.

Means of Stabilization

There are, therefore, apparently three ways in which the stabilization of the iron and steel industry on a prosperous basis can be legitimately maintained. These are : By stimulating the demand for steel ; by discouraging by every lawful means the construction of additional capacity at times when capacity is already over-expanded ; and by the avoidance of uneconomic price cutting.

Much has been done to increase the demand for steel by finding new fields in which it may advantageously be used, but much more can and should be done. An extension of the activities of research departments not only to make improvements in the quality of our products and in the methods of producing them, but also to discover new uses for them, is desirable. A closer co-operation between the producers of steel and our customers, promoting a better understanding of our customer's problems and resulting in our providing steel which will more perfectly meet their requirements will often prevent the customer from seeking substitutes for steel.

Consequence of Overproduction

The law of supply and demand is inexorable and if the producers of steel in the country do not voluntarily refrain from extending capacity beyond the needs of the country, they can expect only one consequence. The law of supply and demand will promptly operate, reducing profits to the extent necessary effectively to discourage new construction, and that condition will continue until demand has again increased sufficiently to take up the excess capacity.

I wish it were possible to have a temporary moratorium on the construction of steel capacity in this country. I firmly believe that with such cessation of new building, the relationship between demand and supply can thus be established on a basis which will insure fair and reasonable profits in the industry for many years to come, for, while our industry will, I trust, never cease growing, in my judgment the technological developments resulting in improved processes and enlarged units alone will render unnecessary for a considerable period the building of new plants to meet increased demand.

For ten years we have been struggling to overcome conditions occasioned by the war period. These conditions are largely behind us and we are entering a constructive era of business engineering, in which one of the essential qualities of good management is a clear perception of the economic aspects of our business. Our problems are not essentially different from the problems of other basic industries. They are not insoluble but they must be solved in the future as they have been in the past without unlawful agreement, or collusion. They can and will be solved when we, the leaders of our industry, appraise better the fundamental principles of economics, and apply them in our various lines of activities. That, I am sure, the members of this great institute can be depended upon to do.

At the conclusion of his prepared speech Mr. Schwab said :

"Let me say we are rapidly approaching utopian plans which I have outlined in my address."

New Incorporations

Eastern Carbonic Gas Co., Inc., New York, carbonic and aerated waters. $10,000. Samuel Fuchs, Abner Berman, Jacob Kutler, Nathan D. Fox.

William J. Lutz, Inc., Bronx, N. Y., paints, lacquers, dyes, etc. 100 shs npv. Edward Stone, John C. Delaney, John J. McGinty, Thompson & McGinty.

Decca Chemical Mining Syndicate, Ltd., Ottawa, Can. 400 shs npv. Harold Fisher, James A. Robertson, Alastair J. Macdonald.

World Fibre Corporation Ltd., Toronto, Can. 500,000 shs npv. textiles. Richmond W. Hart, Harry L. Wright, Charles H. C. Leggott.

Glasolite Chemical Co. Ltd., Toronto, Can. $50,000. George W. Dunnett, Robert Parker, John E. Reynolds.

Flag Oil Corp. of Delaware, Wilmington, petroleum, oil, sulfur, 600,000 shs com. Corporation Trust Co. of America, Wilmington, Del.

Na-Die Laboratories, Bronx, N. Y., drugs, chemicals. 100 shs com. J. J. Hammer, 249 E. 149th St., Bronx, N. Y.

Colonial Laboratories, Inc., Newark, N. J., chemicals. $75,000 pf., 1,000 shs com. Martin O. Schwartz, Newark, N. J.

Consolidated Knitwear Co. Ltd., Toronto, Canada, textiles. $40,000. Percy Shulman, Samuel Factor, Daniel F. J. Kelly.

Associated Drugs Ltd., Toronto, Canada. 10,000 shs npv. Frank W. Richardson, William C. H. Swinburne, Stephen Clements.

California Chemical Corp., New York, chemicals, drugs. 2,000 shs npv. U. S. Corp. Co., New York.

Paint Associates, Inc., Hillsboro, N. J., paints. 100,000 shs pfd $25. par, 100 shs com. npv. A. H. Weisman, Somerville, N. J., Pearl Brand, 38 Park Row, New York, Samuel M. Miller. 38 Park Row, New York.

Hydroproof Chemical Corp., 15 Ex Place, Jersey City, N. J., varnishes, etc. 2,500 shs np. Harry C. Hand, Raymond J.

(*Continued on page 487*)

War-Time Chemical Progress and Peace-Time Chemical Products

By Alan A. Claflin

The L. B. Fortner Company, Boston

In this second installment, Mr. Claflin treats with the development of chemical gases as a vehicle of modern warfare. The development of this greatest contribution of the World War to the known methods of attack is explained from its inception in 1915 to the end of the war.

ON THE morning of April 22nd 1915, on approximately a five mile front about five miles north of Ypres, from the German trenches, was seen to arise small white jets as of steam. These white jets slowly consolidated into a low lying cloud of greenish yellow vapor that blown by a gentle north wind floated, hugging close to the ground, toward the Allied trenches. A new epoch in the annals of warfare was inaugurated. How this innovation in the art of organized murder, which is warfare, impressed the military authorities at the time may be perhaps best shown by quoting from Sir Arthur Conan Doyle's History of the 1915 Campaign in Flanders "The chronicler turns from such knightly deeds as these to narrate the next episode of the war, in which the gallant profession of arms was degraded, and the Germans, stole away a few miles of ground by the arts of the murderer. So long as military history is written, the poisoning of Langemarck will be recorded as an incident by which warfare was degraded, and a great army, which had long been honored as the finest fighting force in the world, became in a single day an object of horror, flying to the bottles of a chemist to make the clearance which all the cannons of Krupp were unable to effect. The crime was no sudden outbreak of spite, nor was it the work of some unscrupulous subordinate. It could only have been effected by long preparation, in which the making of great retorts and wholesale experiments upon animals had their place."

Unquestionably every new development in warfare has inspired similar sentiments among those who preferred to do their killing in the old fashioned way and on the whole is it not better that victory should rest on, depend on, brains rather than brute force? Thinking students know that the introduction of "Poison Gas" into warfare actually makes the world safer for civilization, there can be no real "Bolshevick Menace" or "Yellow Peril" when the efficiency of an army depends on the chemists behind it. While there was certainly considerable preparation before this first gas attack, the evidence is entirely that the German military authorities were skeptical about its efficiency rather than that they had long planned to use it. Chlorine as every one knows was the gas used and it was discharged from ordinary liquid chlorine cylinders, the only novelty being that the discharge came through a pipe that fed at the top but passed through the body of the gas with the outlet at the bottom, thus preventing clogging by freezing. The quantity employed was not greater than a few days production from a modern chlorine plant. A gap was made in the Allied line over five miles wide but the Germans had not the forces at hand to take advantage of this free passage way to the sea and a change of the direction of the wind soon brought the conditions back to the old status quo.

The war brought a succession of new experiences to the military authorities and at first the Germans showed more initiative in meeting them. First, the tremendous demand for high explosive was unanticipated and then the stale mate produced by deep entrenchments and barbed wire entanglements. Historians of chemical warfare go back for the derivation of the idea of poison gas to Greek fire of the Ancients or the stink pots of the Chinese pirates, but it is more likely that the methods of extermination of rabbits in Australia and prairie dogs in our own Nantucket furnished the inspiration for the German chemist, rather than the archives of military history. When the enemy adopts the habits of a burrowing animal, why not use the methods that have been efficacious against such vermin? Had the German military authorities appreciated the possibilities of the success of the first gas attack, the whole history of the war might have been changed. Against an unprepared enemy, gas proved to be invincible, but the gas was released in a cloud and the direction of its blow depended on the wind, when the wind shifted and blew the chlorine cloud back on the German trenches, it found them as nearly unprepared for it as the French Turcos and Canadians had been. To the fact that the winds in

Flanders normally blow from the west and south, and that it was only seldom that the winds favored the Germans, can the ability of the British to hold Ypres be credited. While the Germans were waiting for favorable winds the Allies devised and supplied gas masks. These first gas masks were merely coarse veiling holding a pad over the mouth and nostrils. The pad was saturated with a solution of sodium hyposulfite.

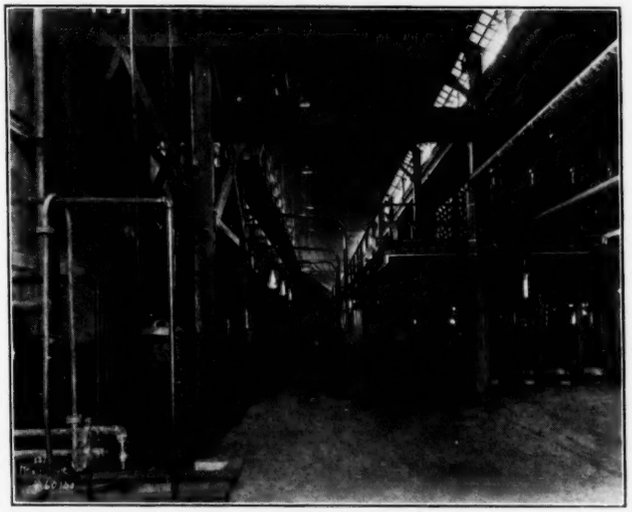
Chemist Now Dominant

The chemist hitherto a vital, but almost unrecognized factor, becomes the dominant figure in the art of warfare. It required less than ten days for the Allied high command to realize that they must adopt it. While it required more than four months to assemble adequate supplies of chlorine and develop means of expulsion, mainly the latter because the Allied nations were not lacking in large stocks of chlorine due to the increased demand for caustic soda from the picric acid manufacturers, the decision to employ chlorine was soon reached. One objection to its use is the quantity that must be employed and the high concentration needed to be effective. To overcome this objection the Germans in December 1915 began to use phosgene. It was discovered by John Davy in 1812 who produced it by the action of sunlight on a mixture of its components. The name is derived from this process of making, "phos" light and "gen" to make.

It is at normal temperature a heavy gas but condenses to a liquid at around 40° Fahr. Since its toxicity is about eight times as great as chlorine, its suitability for war gas is evident. The modern method of making phosgene is to pass equal quantities of chlorine and carbon monoxide over a pure hot charcoal which acts as a catalyst. This method had been developed to a high state of efficiency before the war in Germany on account of the use of phosgene in the color industry and to expand the supply for military demands was merely to increase the number of units. Since only one eighth as much phosgene as chlorine is needed to make a given area untenable, supplies can be much more quickly assembled and because of the small quantity required it can be condensed to a liquid, put in a shell with high explosive and then discharged against the enemy. The Germans did not gain as much advantage as they had presumably anticipated from the introduction of phosgene because the Allies had been "tipped off" to expect it and had provided gas masks with pads saturated with hexamethylene tetramine as well as hyposulfite. Later it was found that a layer of charcoal completely absorbed phosgene. While it had taken the Allies almost five months to follow the Germans in the use of chlorine, the Germans used it offensively on April 22nd at Ypres and the British at Loos on September 25th, it required a much shorter time for them to follow with phosgene. The same projectors could be used and while phosgene had never been made in the same quantity in England as it had in Germany, it nevertheless had been made commercially and by this time the British authorities had ultimately come to the appreciation that the chemist must be an active co-partner in modern warfare. With the advent of the use of phosgene by both sides early in 1916 the era of chemical warfare may be said to have begun. Both sides began to experiment with new gases or gas producing substances, means for projecting them against the enemy and devices for protection against them. Therefore as the chronology marking the introduction of the various compounds employed is more or less uncertain, it may be pertinent to consider briefly the chemistry and properties, and methods of manufacture of those which became the most important and how the initiative and supremacy which Germany originally possessed was eventually overcome by the superior potential resources of the Allied nations. In the first place as the properties of one gas merge into another as concentrations vary,

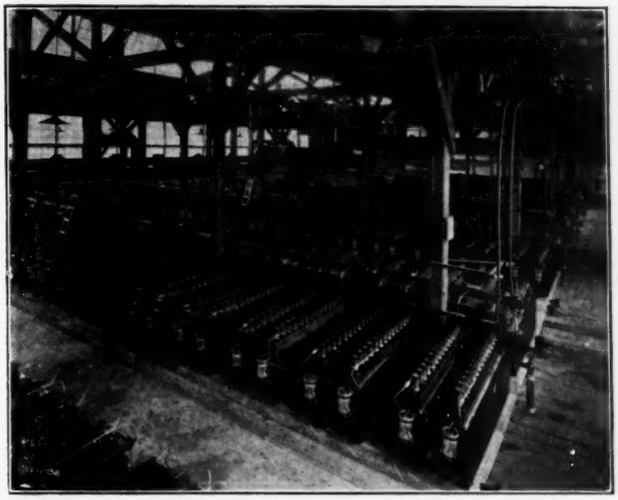
Panoramic view of the U. S. Government chlorine plant at Edgewater Arsenal. This plant is equipped for the production of 200,000 pounds of chlorine per day.

it is well to divide the gases into three classes, lethal, (death producing) sensatory, (tear or sneeze producing) and vesicants (skin blistering). A fourth class is that of the camouflage gases to cover up the presence of a lethal gas, and finally to be considered are the smokes. Then the gases may be distinguished as persistent or non-persistent. The persistent gases are used to render a position permanently untenable; the non-persistent gases merely serve to drive out the defenders and the positions may be rapidly occupied by the attack. The first gases used chlorine and phosgene are of the non-persistent lethal type, although tear producing gases were used before lethal gases were. Included in the bombardment that preceded the first gas attack in 1915 were a certain number of shells presumably loaded with brom acetone, preceding by nearly a year the use of phosgene in shells. Of the strictly lethal gases phosgene continued to be the most important. One modification in its manufacture is to be credited to the Americans. In the production of carbon-monoxide the German process was to pass pure oxygen obtained by the Linde process through a water cooled retort filled with coke. The intense heat of the reaction renders the life of the retorts short. By mixing carbon dioxide with the oxygen, this difficulty is overcome as the reduction of the dioxide to monoxide is endothermic, one reaction cools the other, the life of the retort is prolonged and an economy effected as carbon dioxide



View of phosgene mixer building showing catalyzer boxes and condensers used in the manufacture of phosgene. The boxes are 8 feet long, made of iron and lined with graphite.

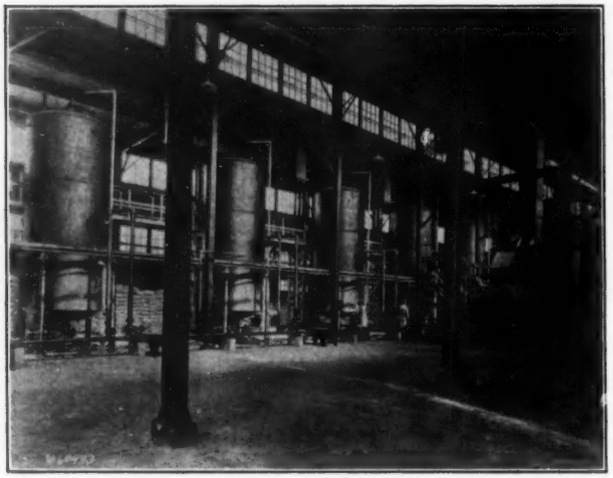
is cheaper than oxygen. At first in the development of poison gases it was considered that deadliness would be the most important factor and with this end in view the French particularly, experimented with hydrocyanic acid compounds but this substance is so reactive and volatile it was found to be far inferior to phosgene. Of the persistent gases, chloro-picrin was first used. In toxicity chloro-picrin ranks considerably below phosgene but whereas the lethal concentration of phosgene is dissipated in minutes, that of chloro picrin lasts for hours and its tear producing properties are such that in concentration of less than a hundredth of the lethal amount, it compels the wearing of gas masks. The name chlor picrin is rather a misnomer—neither nitro chloroform or carbon mono nitro-trichloride would give a better idea of its constitution, C Cl_3NO_2, but it was first made and continued to be made during the war by the action of bleaching powder on picric acid. The direct methods from chloroform or acetone did not give satisfactory yields and then the displacing of picric acid by T N T as the standard high explosive really made this more abundant than acetone. In the process of manufacture, bleaching powder is made into a thin paste and a solution of calcium picrate run in



Interior view of the cell building. Each of the cells shown is capable of a production of 60 pounds of chlorine gas and 65 pounds of caustic soda per 24 hours.

slowly, the mixture being cooled by cold water circulating pipes. When the yellow color has disappeared, steam is turned on and the chloro-picrin distills over, and as it is insoluble in water it readily separates from the condensed water and is drawn off for loading in shells. One of the delightful features of chloro picrin from the point of view of those using it is the intense nausea it produces in many individuals even when extremely dilute and it is not so readily absorbed by charcoal as is phosgene. A soldier cannot wear a gas mask and vomit at the same time, and thus a suitable admixture of chloro picrin shells with phosgene shells make the latter much more effective. Also among the earlier of the persistent gases employed by the Germans was the so called super ralite or Green Cross gas. Chemically this is tri chlor methyl chloroformate. It is an oily liquid with a boiling point of 128°C and specific gravity of 1.65. It is best made by chlorinating methyl formate. Since the Germans had a monopoly on formic acid, the Allies did not succeed in producing this gas on a large scale. It is an extremely effective gas as it combines the toxicity of phosgene with the persistence of chloro picrin. It is probable that the Allied chemists would have, however, achieved the synthesis of formic acid and the production of this gas on a large scale had

not the introduction of mustard gas by the Germans in July 1917 pushed super ralite into the background. Mustard Gas, or to give its chemical name di-chloro-ethyl sulfide became by all odds the most important of all the poison gases. The Germans began using it in enormous quantities. So effective was it, that the British in September 1917 reported more casualties from it in that single month than had occurred from gas in the previous two years. Fortunately the British had by this time an efficient chemical department in their military organization and Mustard Gas was quickly identified and plans for its large scale production were soon underway. Dichlorethyl sulfide was not a new substance to the organic chemist, and it had probably been prepared in a crude state as early as 1822 by the French chemist Despretz. Analysis of the charges of unexploded German shells disclosed from the high state of purity that the mustard gas in them was made by the Meyer process, and at first the start was made to duplicate this process.



Close-up of several units of a battery of 10 stills in a chloropicrin plant. Each of these stills is 8 feet in diameter and 18 feet high.

However the brilliant researches of Sir William Pope discovered a far simpler method for producing this powerful new military agent in quantity. Before considering the methods of preparation it may be well to consider the properties of Mustard Gas that render it such a powerful military weapon. It is a heavy liquid specific gravity 1.27, it solidifies at 14°C, (57° Fahr.) and boils at 215°C. Its vapor is lethal in approximately the same concentrations as phosgene, it is as powerful a tear producer as chloro picrin, and above all even in extreme dilution it has a most powerful blistering or burning effect on the skin. Ordinary clothing serves as no protection against the burning effect, and because of its high boiling point, the persistence of it is so great that places saturated with it are untenable for days and in cold weather even for weeks. One of the peculiar physiological effects of Mustard Gas is that the burns do not develop until six to twelve hours after exposure but after they do develop are very slow in healing from three weeks to three months being required for a very ordinary burn. During the spring offensive of 1918 the Germans so thoroughly drenched the city or the remains of the city of Armentieres with Mustard Gas that for three weeks it was unoccupied by either side.

The original Meyer process for making Mustard gas consists first in producing ethylene by the dehydration of ethyl alcohol. The ethylene is then passed concurrently with carbon dioxide into or water suspension of bleaching powder. This reaction must be conducted as cool as practical, usually at about 5°C. When the ethylene ceased to be absorbed in the presence of an excess of carbon dioxide, the solution which contains 10 to 12% of ethylene chlorhydrin is removed from the calcium carbonate by filtration. The chlorhydrin is converted into dihydroxyethyl sulphide or thiodiglycol by treatment with sodium sulphide at 90° to 100°C. The thiodiglycol is separated from the water by boiling off the latter, and is then converted into mustard gas by treatment with dry hydrochloric acid. The final purification is by distillation in vacuum. The maxiumm production by the process by the Germans is stated to have been 300 tons per month, while the production of a relatively complicated organic product at the rate of 300 tons or 600,000 lbs. per month is no small technical achievement—it rather fades in importance compared with what the Allies were doing when the war ended. The process of Sir William Pope consists in passing ethylene into sulfur chloride whereby the dichlorethyl sulfide is formed with the separation of sulfur.

At first the separation of the sulfur in the British process was a difficulty as it obstructed the tubes admitting the ethylene but Arthur Green, the British coal tar chemist, discovered that by conducting the reaction at 30°C instead of 60°C the sulfur went into colloidal solution and did not separate out. The presence of this colloidal sulfur instead of being a detriment seemed to rather increase the efficiency of the mustard gas and due to the greater simplicity of the process the British were making 500 tons of mustard gas per month alone when the armistice was signed while at the vast Edgewood arsenal in America there was a capacity of no less than 40 tons per day, or 1,000 tons per month.

French Most Effective

As a matter of fact the potentialities of the British and Americans in making mustard gas contributed little to the actual decision in military operations, as the chemical progress was far more rapid than the mechanical progress and vast quantities of gas were available with no shells to put them in. Indeed the French program was much better co-ordinated. The process which they used was not as simple as that of Pope, it depended on the absorption of ethylene by sulfur dichloride in solution of carbon tetra chloride. The plant using this process was adjacent to the aniline color plant of the Societe Chemique des Usines du Rhone, and by March 1918 it was produc-

ing two or three tons per day and by July the production had increased to twenty tons and what was of great practical importance this French mustard gas was loaded into shells as fast as it was made and actually fired at the enemy.

In the same class as mustard gas, but so far as war time chemistry is concerned relatively insignificant, because it was never made in quantity and never used in hostilities is Lewisite or the "Dew of Death." This compound, the invention of Captain W. Lee Lewis of the United States Army, was the only compound actually new to organic chemists that was developed as a war gas. Chemically it is somewhat analogous to Mustard gas with the substitution of arsenic in the place of sulfur. It has the powerful skin burning properties of the mustard gas but with the difference that the burns produced are fatal. Lewisite is produced by the absorption of acetylene in arsenic trichloride in the presence of anhydrous aluminum chloride as a catalyst. It is a colorless liquid with a boiling point of 93°C. Because of this relatively low boiling it would not be nearly as persistent as mustard gas. The introduction of second and third molecules of acetylene increase the boiling point but lessen the poisonous properties, on the other hand they increase the sneeze producing properties, but in this direction it is doubtful if it is as effective as the sneeze gases which were actually used. Strangely enough while it was the presumable toxic properties that directed military attention toward arsenical compounds, the one arsenic compound that was extensively used during the war is not particularly poisonous. Diphenyl chlorarsine, that is a substituted arsine, As H_3, in which two of the hydrogen atoms have been replaced by phenyl radicles and one by chlorine has been known to organic chemists since 1883, and its peculiar property that made it useful to the German army is that of sneeze producing. In appearance it is a white powder with a melting point of 44°C and boiling point of 333°C. It has therefore an extremely low vapor pressure, but if a small quantity is included in a shell charge the explosion disperses it as a smoke that will penetrate the ordinary gas mask canister and provoke an irrepressible fit of violent sneezing. Wearing a gas mask and sneezing are so to speak incompatible and as the quantity of diphenyl chlorarsine or Blue Cross gas to use the war time name, required to produce sneezing is so slight, it was extensively used from 1917 on by the Germans whenever it was considered advisable to "gas" a section. The Allies while appreciating the value of this product never reached the stage of military production, although a plant was well on its way to completion when the war ended. The Allied process for manufacture was by the reaction of tri-phenyl arsine and arsenic tri chloride. The German process on the other hand was in several stages beginning with the absorption of diazotized aniline in sodium arsenite solution, setting free a phenyl arsenic acid that was then reduced to the arsenious acid, which reacted with further quantities of diazotized aniline to the diphenyl arsenious oxide, which in turn was converted by hydrochloric acid to the diphenyl chlorarsine. Toward the close of the war the Germans to a slight extent replaced the diphenyl chlorarsine, by the diphenyl cyanoarsine, which is nearly as powerful a sneeze producer and much more toxic.

Tear Producing Gases

In addition to the sneeze producers and in a sense particularly important because they were the first non-explosive chemical substances to be used in shell charges are the tear producing gases. These gases force such an intense flow of tears that virtually they produce temporary blindness. Used as early as April 1915, that is, before a gas mask was a common accoutrement of a soldier, the idea of the tear gas was to render trenches temporarily untenable and to put machine gun operators and rifle men out of commission while barbed wire was cut, in other words the tear gas was the final preparation for an assault. The first tear gas used was bromacetone. According to the German method of manufacture bromaine up to 10 per cent. excess of the theoretical is added to a solution of one part acetone in two parts water. The bromination in thousand kilo lots required 48 hours with thorough agitation at a temperature of 35°-40°C.

The French process was slightly different in that sulfuric acid was employed and a product obtained which consisted of four molecules of brom acetone and one of chlor acetone. This product was known as Martonite and although chlor acetone alone has less than a tenth the tear producing effect of brom acetone, the mixture is apparently even more powerful than the brom acetone alone.

Composition of Tear Gas

Because of the scarcity of acetone the bromine compounds of toluol and xylol were extensively used as tear gases. These are made by direct bromination in sunlight. The most widely used German tear gas, Green T stoffe, was a mixture of 88 parts benzyl bromide and 12 parts brom acetone. The most powerful tear gas of all is brom benzyl cynide. This is made by first forming benzyl chloride by the chlorination of toluol, converting this into benzyl cyanide by the action of an alcoholic solution of sodium cyanide and then directly brominating the benzyl cyanide.

While there were a number of other substances used as gases for various purposes, those described constitute all of prime military importance and it may be time to consider the war time production of acetone, which as already seen was a compound of first military importance, first as a nitro cellulose solvent for the production of cordite, and then as a constituent of tear gases and finally as a solvent for what was known as air-plane dope.

Liquid
SULFUR DIOXIDE
Its Manufacture, Transportation and Uses

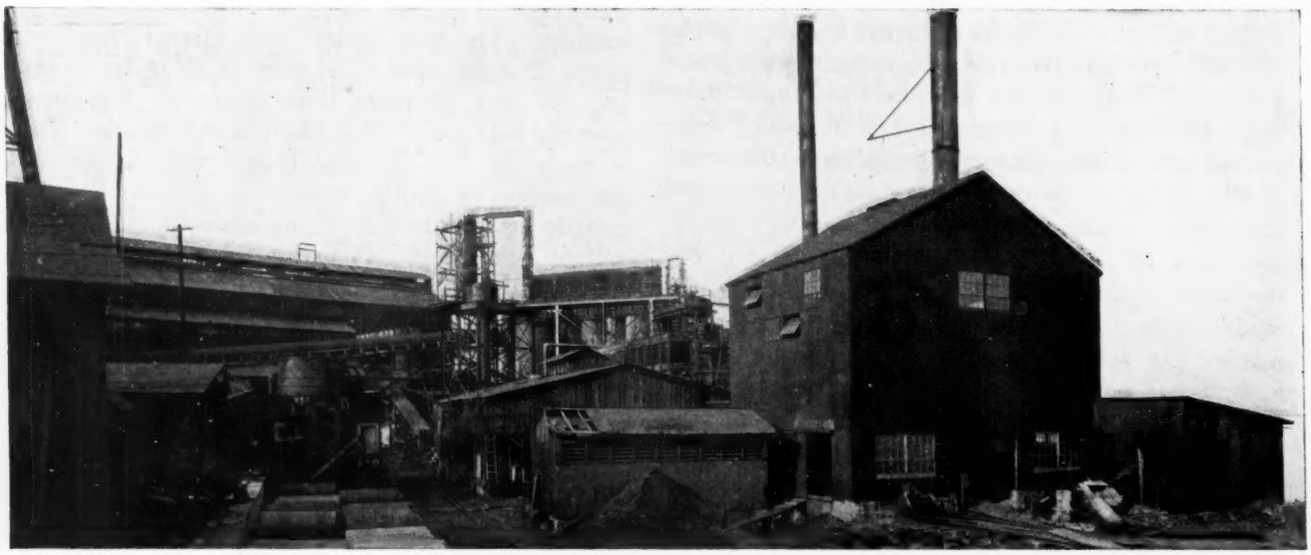
By Charles W. Johnston
General Manager, Virginia Smelting Company

LIQUID sulfur dioxide is being made to-day in the United States by at least six different firms. Based on what information I have been able to obtain, it is my belief that any one of these firms could produce in its present plant, all of the liquid sulfur dioxide that is being consumed in the United States, and that probably the combined capacity of the six plants is nearly three times present domestic consumption. The following Bureau of Census figures show the growth of this industry as far as sales go. The production capacity has grown much more rapidly than consumption. In addition to the present six plants, at least three other liquid sulfur dioxide plants have been built in the United States and each operated for a considerable length of time. These three plants have been entirely dismantled and are not considered in my estimate of present production capacity.

Production of sulfur dioxide: 1923, 1925, and 1927.

	1923	*1925*	*1927*
Pounds.....	6,575,995	8,861,341	10,133,983
Value.....	$414,049	$635,738	$687,855

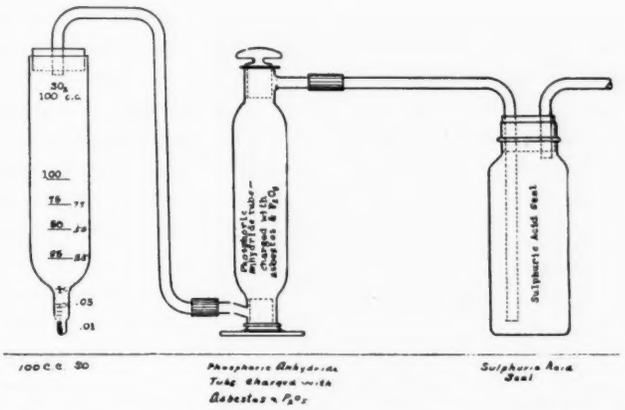
Details of methods of manufacture used by those producing at present differ to a considerable degree, but probably the method used by the majority follows closely the European process. This consists of the absorption of SO_2, obtained by the burning of sulfur in water, giving a liquor containing SO_2, in amounts depending on the temperature of the water and the per cent. of SO_2 in the gas from the sulfur burner. The SO_2 is liberated from the water by heating the water to 212°F. The gas so liberated is mixed with considerable water vapor and some small amounts of air. This water must be removed and for this purpose drying agents such as sulfuric acid are used. After liberation from the water the SO_2 gas which is about atmospheric pressure is compressed and after compression cooled. The temperature to which it must be cooled before it will liquify depends on the partial pressure of the SO_2 in the mixture of SO_2 and air that has passed the compressors, and on efficiency of the condenser. If this gas were 100% SO_2 the temperature at which it would condense is shown in following table:



General view of a sulfur dioxide manufacturing plant.

Degrees Fahrenheit	*Gauge Pressure*
14	0
32	7.7 lbs
50	18.5 "
70	34.6 "
90	56.3 "
110	84.8 "

In this process considerable heat is required for raising the temperature of the liquor to 212°, for heat in water vapor going off with the SO_2 gas, and for losses due to radiation. Steam is used for this heating and the quantity of heat needed per pound of SO_2 driven from liquors may be estimated from assumption that 80 to 100 pounds of liquor must be heated from about 60° to about 212° F. to liberate one pound of SO_2 gas. Heat exchangers to recover some of this heat have



Moisture tube and phosphorous pentoxide tube used for determining the moisture in liquid sulfur dioxide. The sulfuric acid bottle serves as seal. The SO2 gas passing out of this bottle is led out of doors.

been tried. As wet SO_2 is extremely corrosive, these heaters, besides being very expensive to build, may, under certain conditions, be expensive to maintain in operation, due to rapid depreciation.

At the plant with which I am connected, the SO_2 is liberated from the liquors under a vacuum. This means that steam from the exhaust side of a steam turbine is used for heating these liquors. The power generated from the steam required for heating is more than enough to run the whole sulfur dioxide plant and there is excess power for other uses around our smelter. Under this method of operation liquors are heated to 126° F., vacuum of about 26, is maintained on the turbine. Steam to turbine is at 200 lbs. pressure superheated 150°. SO_2 gas liberated from liquors has a temperature of about 100°F. and is immediately cooled still further in a condenser, so that some water is condensed from this gas before it goes to the first vacuum machine. Compression is done in four stages. Final pressure is rather high, 110 to 120 pounds, because cooling water taken directly from the harbor often has a temperature of more than 80°F. Another very unique feature of the process is that no drying agents are used anywhere in the process to remove water. The water is removed by specially developed process. Our best grade of "Extra Dry" Esotoo for refrigeration purposes now contains less than thirty parts of water per million parts of SO_2 by weight, that is .003% water. In the plant receivers, it often runs as low as ten parts, that is .001%.

While the great bulk of liquid sulfur used to-day in the United States is made from the burning of sulfur thus directly using a raw material for its production, there are sources of waste SO_2, such as exist around smelters that might be used. Our plant was originally designed to use sulfur dioxide from our smelter, and did for some time. The smelter closed down some years ago, and we started to burn sulfur and have continued to do so ever since. Pyrite is not used in this country. While cheaper sources of sulfur, such as waste gases around smelters, would help to reduce cost of making liquid sulfur dioxide, the sulfur cost is only a small part of the total cost. Increased output is the item that would help most to reduce costs. Certainly some of the present plants could greatly increase their production with but a slight increase in operating expense.

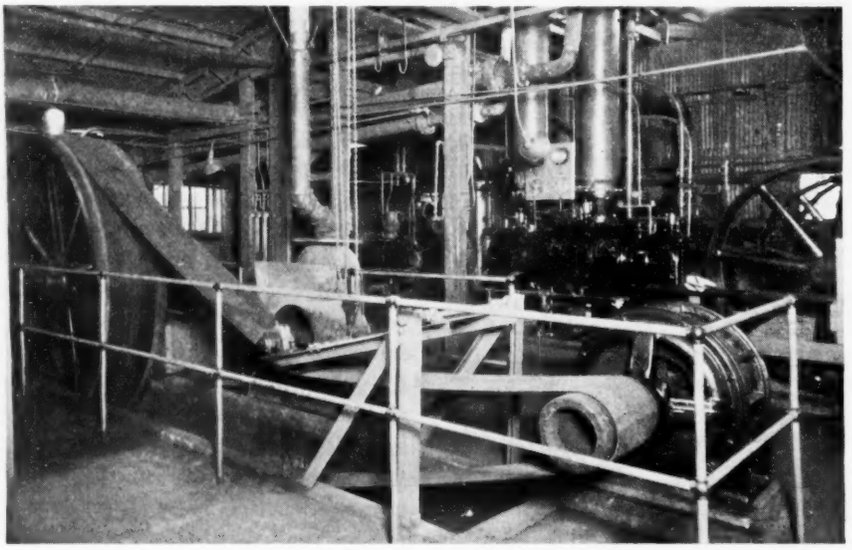
The question of impurities in liquid sulfur dioxide is of great importance to those using it for refrigeration. For all other uses apparently the commercial grade, containing one to two-tenths of one per cent. water is entirely satisfactory. This grade also may contain some oil and impurities. The sulfur dioxide for refrigeration work is purchased under very carefully drawn specifications. Usually these require total water in it to be less than one hundred parts per million; it must contain no sulfuric acid, oil, or dirt, and not over one hundred parts per million by volume of non condensible gases.

The analysis of this very pure liquid sulfur dioxide presents many difficulties. The method which is being used by most of those working with this grade consists of evaporating a known quantity of the liquid sulfur dioxide (usually one hundred cubic centimeters) in a glass tube, the sulfur dioxide gas being passed from this tube through a tube containing phosphorous pentoxide. Any oil or dirt will be left behind in the evaporation tube, and if there is more than a total of two hundred parts per million moisture in the sample, there will be some water saturated with sulfur dioxide also left in the tube. If there is no moisture left behind in the tube, it is clear evidence that the sulfur dioxide being tested did not contain over two hundred parts per million by weight. Great care must be used in drawing the sample to prevent moisture getting into it from the air. The phosphorous pentoxide tube must be kept at a constant temperature during the test. Before starting the test the phosphorous pentoxide tube should be saturated with sulfur dioxide gas. If the temperature of this tube changes during the test, very erroneous results will be obtained, increased temperature during test giving low results, lower temperatures giving high results.

Testing for inerts, the sulfur dioxide is absorbed from the gas in caustic soda solution, and the air which

may have been in the sulfur dioxide is left behind after the treatment with caustic soda and is measured, so that a simple division of the volume of this air by the volume of the sample gives the per cent. by volume of the inerts in the sample.

Liquid sulfur dioxide is shipped as a Green Label gas in containers which must meet the Bureau of Explosives specifications. These containers vary in size from the small ones, holding three pounds, up to the single unit, Class V tank car, holding 40,000 pounds or even 60,000 pounds. Each manufacturer has among the smaller size containers sizes which fill the particular needs of some of his customers. Certain sizes however, are used by all, probably, because this size containers are ones that had been developed for use in other gases such as chlorine, for example. Such cylinders are those holding five pounds, ten pounds and 150 pounds. These containers that are being used are heavy, weighing in the case of the 150 pound size about 125 lbs. The ton container has proved itself a most satisfactory size; fifteen such tanks used on a multiple unit car frame move as a tank car of just thirty thousand pounds net weight.



View of Section of Compressor Room in Esotoo Plant.

The container problem of the commercial grade is relatively simple. Customers fall, almost without exception, into three classes—Single unit tank cars of 40,000 lbs., ton drums, and 150 pound cylinders. Containers can be kept in satisfactory condition without much trouble. The refrigeration industry has created a wholly different condition. These small refrigeration machines require a charge of but a few pounds of liquid sulfur dioxide, some as little as 2½ pounds, many not over five pounds. Shipments to the factories are made in either 150 pound or 2,000 pound drums, but the man in the field only wants a small container of ten pounds or less. There are thousands of such service men scattered all over the world. Some of these are beginning to buy in the larger containers holding 150 pounds, and transfer from the 150 pound to their small five or ten pound cylinders as required. The transferring is not difficult, but the cleaning of the small cylinders before charging is most difficult and troublesome. This widespread need for sulfur dioxide for servicing machines introduces the problem of handling a large number of small customers scattered over the world, most of whom are buying only small quantities of a most pure, heavy chemical in an expensive package that must be returned to factory for cleaning and refilling. All the containers used are steel, and they must be most carefully cleaned and dried, and evacuated before filling, otherwise, the contents cannot be delivered to the customer dry and clean enough to meet the specifications.

Unfortunately for the manufacturer, this problem of cleaning containers is made more difficult by the manner in which the service man handles the cylinders. All realize fully that sulfur dioxide must be free from moisture, oil and dirt. They cannot and will not use any other sulfur dioxide, and these men all know also how hard it is to get a cylinder cleaned so that it is suitable for transportation. In spite of this, but largely because the men cannot help it, they use the empty cylinders for discharging the oily sulfur dioxide from a machine they are to repair, or in some cases the valve on an empty cylinder is left open and moist air, if not actual water, gets into the empty cylinder, causing corrosion in the cylinder. All this oil and rust must be removed entirely before refilling the cylinder. This is by no means an easy task. A manufacturer may make a product that is satisfactory, but dirty or moist cylinders can ruin it entirely. What a customer demands is that the sulfur dioxide as he uses it from the container meets his specification.

Some of the manufacturers follow rigidly the practice of making an analysis on every single cylinder shipped, whether that cylinder holds five pounds, or 2,000 pounds. This affords a double check, as regular analyses are run on a product as it is made.

Stocks of liquid sulfur dioxide are carried in warehouses scattered throughout the United States and Canada, so that probably any user who is located on a railroad anywhere in the United States can to-day get supplies delivered to him within twenty-four hours.

The increasing use of liquid sulfur dioxide in the small refrigeration units has caused considerable attention to be given to its effects on people who might breathe it. Apparently no really serious scientific study along these lines has yet been made.

References in medical literature are probably to tests using gases such as exist around smelters, which may contain, besides sulfur dioxide, other chemicals. The statements and tables given in reference to effects noted should be considered with certain facts in mind, which facts and considerations the authors do not mention, probably because the authors themselves had these facts so clearly in mind that they did not feel it was at all necessary to refer to them. This failure to refer to such facts and considerations has, however, already resulted in misunderstandings, if not real injustice. Several, if not all, medical references to the subject carry the same statement that "On the membranes of the nose and throat sulfur dioxide forms sulfuric acid." If sulfuric acid is formed, it is formed only to an extremely small extent. No such modifying statement appears, so that it can readily be seen how badly misled anyone may be who is interested in trying to learn what to expect when he, or his friend, or client, has breathed sulfur dioxide. Everyone can picture all too vividly what sulfuric acid would do to the membranes of the nose and throat, but few can be expected to know that, if formed at all from sulfur dioxide, this sulfuric acid is formed to an extremely small extent, and hence that any injury from sulfuric acid so formed is almost impossible. It seems quite probable that these references in the medical literature were intended to read "sulfurous acid" and not sulfuric acid. Sulfurous acid (H_2SO_3) is sulfur dioxide in water. Its properties are decidedly different from sulfuric acid. One author of one of the standard books in which this statement appears told me it was intended to read "sulfurous acid."

Sulfur Dioxide a Safe Gas

One other point on what has been written about the effects of sulfur dioxide, and that is, while the data given shows serious effects or even death after breathing gases containing certain volumes of sulfur dioxide, no mention is made of the fact that as sulfur dioxide even in small quantities is so irritating, no one would breathe such concentration unless they were so trapped they could not get away. Because a leak of sulfur dioxide makes itself so quickly and distinctly known, sulfur dioxide is often called a "Safe Gas". There is no chance, with sulfur dioxide, of one being killed as he sleeps, yet references in medical literature might so be construed by those who to-day, because of widespread use in small refrigeration machines, look up these references.

The uses for liquid sulfur dioxide besides that of refrigeration, are quite numerous. Many of the uses have been developed after long and expensive research work; such, for example, as the making of various hydrosulfites, stripping compounds, and certain intermediates. For use as an antichlor, it takes the place of sulfur dioxide formed by the burning of sulfur, or it replaces sodium bisulfite. Were delivered prices to the user somewhat lower than at present, it probably would replace burning of sulfur in a number of industries, this substitution being possible because the greater ease of control, making for accurate work with a minimum of waste, would warrant users in paying more for liquid sulfur dioxide than that for which they are to-day making their requirements from sulfur.

In refining of oils in California the liquid sulfur dioxide is used as a liquid for dissolving out of the oils certain objectionable impurities, that is, the liquid is used as a solvent. After dissolving the impurities, the liquid sulfur dioxide is separated from the purified oil, evaporated, leaving behind the impurities, and after being condensed again to a liquid, it is ready for use in treating more impure oil. Only an extremely small amount of sulfur dioxide is lost. This loss must, of course, be made up by purchasing more liquid sulfur dioxide. Liquid sulfur dioxide will dissolve many substances, but as yet it is probably not used as a solvent except as outlined above in refining of oils. When uses as a solvent, or, in fact, uses for any purpose are developed, sulfur dioxide plants already built are ready to supply this new demand and this fact is one that lends real encouragement to those working on such problems. Some of the manufacturers themselves have excellent facilities for research and are doing considerable work on new uses.

The following meetings have been scheduled to be held in Rumson Hall, Chemists' Club, New York, during the 1928-29 season:

1928

Oct.	12	American Institute of Chemists (Room A)	
Oct.	19	Societe de Chimie Industrielle	Regular Meeting
Nov.	2	Society of Chemical Undustry (in charge) Societe de Chimie Industrielle American Chemical Society American Electrochemical Society	Joint Meeting
Nov.	9	American Institute of Chemists (Room A)	
Nov.	23	American Electrochemical Society	Regular Meeting
Dec.	7	American Institute of Chemists (Room A)	
Dec.	14	American Chemical Society	Regular Meeting

1929

Jan.	4	Society of Chemical Industry (in charge) Societe de Chimie Industrielle American Chemical Society American Electrochemical Society	Perkin Medal Joint Meeting
Jan.	11	American Institute of Chemists (Room A)	
Feb.	1	American Electrochemical Society (in charge) Society of Chemical Industry Societe de Chimie Industrielle American Chemical Society	Joint Meeting
Feb.	8	American Institute of Chemists (Room A)	
Feb.	22	Society of Chemical Industry	Regular Meeting
Mar.	1	American Chemical Society (in charge) Society of Chemical Industry American Electrochemical Society Societe de Chimie Industrielle	Nichols Medal Joint Meeting
Mar.	8	American Institute of Chemists (Room A)	
Apr.	5	Societe de Chimie Industrielle (in charge) American Chemical Society Society of Chemical Industry American Electrochemical Society	Joint Meeting
Apr.	12	American Institute of Chemists (Room A)	
May	3	Society of Chemical Industry (in charge) American Electrochemical Society Societe de Chimie Industrielle American Chemical Society	Joint Meeting
May	10	American Institute of Chemists (Room A)	
May	24	American Electrochemical Society	Regular Meeting
June	7	American Chemical Society (in charge) Societe de Chimie Industrielle American Electrochemical Society Society of Chemical Industry	Joint Meeting
June	14	American Institute of Chemists (Room A)	

An Unusual Sulfuric Acid Explosion

The incident related here was an actual occurrence at a large industrial plant in this state. It is the writer's opinion, his name being witheld for obvious reasons, that in spite of the fact that sulfuric acid is widely used, very little is known as to its dangers in transportation and handling.

SULFURIC acid is used in gas purification for ridding the gas of ammonia. Large quantities of acid are used in the process and over a period of about eight years we have handled thousands of drums of acid without trouble. About two years ago we erected two large acid storage tanks and so discontinued the purchase of acid in drums. We did, however, feel that as a safeguard to the operation that it was desirable to have a four or five hours supply stored in the sulfate plant so that in the event of trouble in the acid lines we would not be faced with the very serious situation of being unable to free the gas of ammonia. For this reason last October we purchased three new 110 gallon acid drums from the acid manufacturer, filled them to the proper level, vented the bungs by loosening the plugs and stored them so that the acid would be readily available. This procedure was safe practice as far as any of us knew and is, I believe, followed by other users of sulfuric acid. We have discussed the proposition with the chemists of the leading industries in this vicinity and they are all in accord with us on this point.

The Explosion

During the night of August 20th, one of the sulfate plant men noticed what he believed to be a very slight seepage from the top of the drum head and left a note saying that he believed the drum should be renewed. The next morning a gang of men, under the direction of a competent engineer, went up to empty the drum. The engineer decided to drain the acid to the mother liquor tank through a manhole located about six or seven feet from the spot where the drum was lying. The men had just taken a strain on the drum when it let go. The head was blown out completely and the drum ripped open along the line of weld to a distance some two inches below the second ring. One man died four hours later from acid burns and a badly broken leg. A second man died two days later from gangrene of the intestines which was caused by a severe blow which he received in the lower abdomen. The other three men involved, including the engineer, suffered severe burns, but are all making good recovery.

This explosion was caused, beyond a doubt, by excessive gas pressure in the drum and indicates the great necessity for greater general knowledge on this subject. The conditions of storage in this case were practically ideal. The building in which the drums were stored is of brick with concrete floors so that the temperature fluctuation would be considerably less than that of outdoors.

In spite of the fact that sulfuric acid is very widely used in industry, very little exact knowledge is available as to the dangers attendant upon the transportation, handling and storage on this substance. It is generally believed that concentrated sulfuric acid, that is acid of 65° Be. or higher will not attack iron and consequently can be shipped and stored with impunity in iron drums. It is further contended by some sources that acid of a concentration as low as 60° Be. can be safely handled in iron drums. This supposition, and as far as the writer can determine it is nothing more than a supposition, is incorrect. 66° Be. sulfuric acid will attack iron with the liberation of hydrogen and ferrous sulfate. This has been proven by the work of two Australian chemists who demonstrated that the reaction is definite and that dangerous pressures are experienced in drums stored over a period of three or four months at ordinary atmospheric temperatures. It is interesting to note from the work of these men that the gases evolved at temperatures of 25°C or less are nearly all hydrogen with a slight trace of sulfur dioxide. With an increase of temperature the percentage of hydrogen decreases and that of the SC_2 increases until at 180°C the gas is 100% SO_2.

Necessary Precautions

We are very much interested in disseminating this knowledge among the users of sulfuric acid because we feel that a few simple precautions will obviate the possibility of a recurrence of the accident which we suffered in August.

In the first place, sulfuric acid should not be stored in drums, this for the reason that the drums are not of heavy enough gauge metal to stand the corrosion that is bound to occur, and in the second place as the reaction goes on between the acid and the iron, a vent, unless it is rigidly inspected, will be sealed up by the sulfate with the possible results of the accident described.

FIRE PREVENTION PAYS DIVIDENDS

By H. F. Russell
Engineer, What Cheer Mutual Fire Insurance Company

THE annual fire loss in this country has exceeded $500,000,000 during five of the past six years. Most of this destruction was avoidable.

The country as a whole is not sufficiently interested in fire prevention. It is inclined to accept fires as acts of fate. However, experience has shown that carelessness and heedlessness on the part of property owners have had more to do with fires than all other causes. Manufacturers are beginning to appreciate that fires can be prevented. The tendency is now to leave nothing to chance, but to study the hazards in the properties, eliminate the fire causes, and to protect the plants in such a manner that disastrous fires are practically impossible. Similar tendencies are noticeable among certain owners of other types of properties. As a result of the increasing interest in fire prevention, 1927 showed a marked reduction in losses. During that year the losses amounted to only $478,245,620. So far, 1928 has also shown a favorable decrease, and it is hoped that the improvements in construction and the teachings of fire prevention will continue to have effect.

Fire prevention is a necessity of modern business. Every manufacturer should realize the advantages to be gained from the installation of fire prevention equipment particularly as it is practically impossible to build plants which are absolutely fireproof.

Fire prevention pays dividends and is a necessity for modern business. The cost of prevention and the cost of insurance premiums are on the opposite ends of a balance, when one is up the other is down. The plant owner has a choice of spending money for protection and obtaining insurance for a nominal cost or leaving his property unguarded and paying extremely high rates for coverage. Everything favors the installation of protection. The cost is paid from the savings of insurance premiums. During the interval that the protection is paying for itself the owner has the use of the equipment which is always at hand safeguarding his plant. In most cases the savings in premiums will retire the investment in protection within five years.

While it is possible to so build and operate certain types of plants that all fire hazards are eliminated, very few manufacturers can do so. Experience has shown that there is scarcely a property immune from fire. Nearly all plants have fire hazards somewhere in the buildings or their contents. Some have additional hazards from exposure that are beyond the control of the plant owners. Together the combined hazards make destruction of any plant possible.

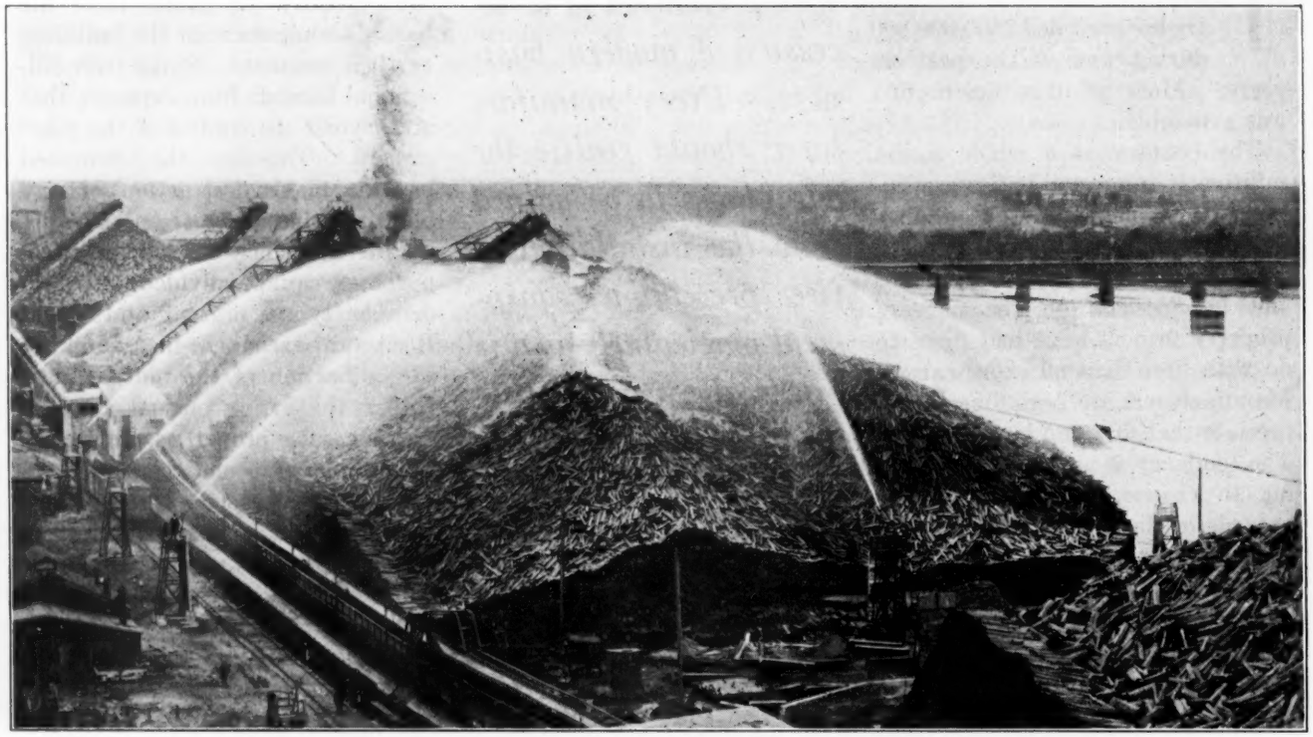
Fire insurance for all practical purposes can be divided into two distinct types, mutual and stock. Reciprocal exchanges in general are a modification of the mutual idea. Under the strict mutual plan, a group having properties practically similar agree to share each others losses, thereupon, loss prevention becomes their primary interest — the lower the losses, the less the cost. Under the stock plan a company is formed, stock purchased, and policies issued on property owned by others.

Regardless of insurance, a fire is a loss. Insurance may shift the burden, but not the destruction. Whenever property burns the world is poorer. When insurance premiums are paid, the assets of the policyholder are reduced by a corresponding amount.

Hardly ever do insurance policies cover the entire loss caused by a large fire. As soon as the actual physical loss is determined, the claim is promptly settled, but in accordance with the terms of the policy. The insurance applying may have been based on the depreciated value of the structure, whereas the new building must be erected in accordance with present-day costs and regulations. In the case of machinery, the insurance may be based upon the purchase price, whereas the cost of the replacement equipment will be considerable greater. As for the stock in process, the loss is usually settled upon the replacement costs, the manufacturer losing that proportion of profit he was anticipating.

Occasionally property is only partly insured, the owner believing that his policies represent the amount of any possible loss he can have, and that he will be paid in full for any loss up to the limit of the policies. But such is not the case. Most policies contain a co-insurance clause, and through the operation of this clause he is only paid in proportion as his insurance

bears to 90 per cent. of the actual value of the property at the time of loss. There is nothing in an insurance policy that leads to more honest misunderstandings than this co-insurance clause, and yet it is a legitimate part of the insurance contract. Premiums are based on a certain percentage of actual values, depending upon the clause used, and taking into consideration the expectation of small losses, total losses, expenses and profits of the insurance business. Insurance companies in general have been forced to adopt the co-insurance clause to protect themselves and to force unscrupulous policy-holders to carry insurance up to the value of the clause used. It has been found inadvisable to attempt to differentiate between policy-holders as far as most insurance companies have been concerned. Therefore, practically all policies contain a co-insurance or some similar clause. As a result, all policy-holders have to pay for the inclination of a few of the less scrupulous brethren.



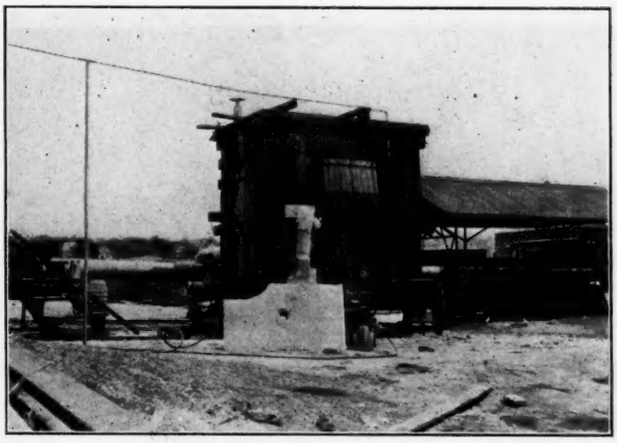
View of the Monitor Nozzle Protection for pulp wood piles in operation. Seven 1¼ inch streams are delivering 4700 gallons of water per minute on top of the pile.

Where accurate check is kept and the amount of insurance increased or decreased correspondingly, the co-insurance clause works no hardship on the policy-holder. It is only when the holder has failed intentionally or otherwise, to keep his insurance proportionate to value that the clause limits the amount of recovery. Many owners do not have the time or inclination to become familiar with their policies and it is on this class that the clause works a real hardship. However, they, as owners, are the most vitally interested, and they should be familiar with the contracts they accept.

Often the consequential losses of a fire exceed the physical. There is the loss of profits not only for the section where fire occurred, but for other sections that are rendered non-productive during the period of replacement. There are the lives of the employees that can never be brought back. Other experienced employees will be forced to seek work elsewhere, contracts cannot be fulfilled, customers will be lost and records may take years to replace. In certain small communities the welfare of the neighborhood will be injured. In fact, the losses following a severe fire may cause the liquidation of even the most prosperous company. It has happened many times in the past. Almost anyone can recall the names of products that years ago were stable articles on the market, yet these same trademarks do not appear to-day. If the causes were traced it would be found that fire had played a disastrous part in the elimination of many.

The effects of fire are far reaching. Two years ago a prosperous concern in New York state was enjoying a thriving business. Through hard work the management had developed an efficient organization; their new patterns were being favorably received by the trade, and the results of several years labor were beginning to show. They had concentrated entirely upon production, giving scarcely any thought to protection. Fire caused destruction of the entire plant one night in spite of the best efforts of an efficient public department. The loss was satisfactorily adjusted and promptly paid, reconstruction was started immediately on a plant of the same size, but designed for even more efficient operation. The reserve fund that fortunately had been accumulated was sufficient to permit retention of a few key employees. These were set to work to rebuild by memory

the patterns, moulds, and other devices which would be necessary when production was resumed. As all records were destroyed, the honesty of the customers was depended upon for the payment of bills that were due, salesmen were asked for lists of customers, prospects, etc. Twelve months after the fire the first catalogue was distributed, it was not complete, but it included most of the principal products that were ready for production. The management breathed a sigh of relief and thought they were back in the game. Six months later they were forced to seek outside capital. The new interests took control, placed new officers in charge, and are now gradually paying the bills that had accumulated.



Test house for dust and vapor explosions. This picture shows the house loaded and ready for explosions.

It is possible to protect most manufacturing plants so that disastrous fires can be practically eliminated. In fact there is a group of plants in this country insured on the mutual plan whose fire losses have averaged less than $275 per million dollars of insurance for the past six years. This is equivalent to a ratio two and three-quarters cents per one hundred dollars. These plants, while admittedly selected risks, have so developed the science of fire protection that they have practically guaranteed themselves against any disastrous fire. The advantage of such a low loss ratio are twofold. There is no loss of money nor business, while the cost of insurance is very low.

There is no loss until there is a fire. "An ounce of prevention is worth several pounds of cure." Neglect of a few fundamental principles may make, with the proper combination of circumstances, a second-class brick pile out of a flourishing plant.

With proper attention to prevention most fires can be eliminated, and those that are not avoided can be easily controlled if protection is provided beforehand. Successful battles are fought years in advance. Similarly, fires are most easily controlled if they are anticipated and provided for.

The history of fire prevention has been extremely interesting. It started nearly a century ago among the mill owners of New England. At that time cotton mills were considered extra hazardous risks, many insurance companies refused to accept liability at any price. Some of the more progressive manufacturers installed in their mills such protective devices as were then available, and applied for reduced rates of insurance which were denied. The refusal had a pronounced effect upon these mill owners for they decided to organize their own mutual insurance companies and create a department to study fires and devise methods of protection. The results were extremely successful, for to-day a properly constructed and protected cotton mill is considered a selected fire risk and obtains very favorable rates.

Automatic sprinklers were one of the early developments of fire protection. At first sprinklers consisted of perforated pipes attached to the ceilings, the water supply being manually controlled by a valve located outside of the building. Improvements were gradually made until to-day automatic sprinklers are considered the most efficient of all fire protective devices. When first introduced, many manufacturers objected to their installation fearing that the possibility of accidental water loss exceeded the value of protection in event of fire. While a few of the heads became defective, the majority proved extremely reliable. To-day, actual records show that only one head per year in eighty thousand opens prematurely from all causes. Sprinkler leakage insurance can be obtained at a nominal cost, in fact, the mutual companies making a specialty of fire insurance on sprinklered plants include such insurance in their fire insurance policy.

This picture of the test house was taken at the moment of explosion. Notice bricks thrown in the air from the roof vent.

The value of sprinklers in controlling fires in chemical plants is illustrated by the following extracts from a recent letter of a plant manager.

"I regret to inform you of a rather serious threat of fire in our beta naphthol department, Sunday, September 9th at about twelve noon. At this hour the safety valve on beta naphthol Still No. 1 opened, due to an accumulation of pressure in this still, and a considerable volume of beta naphthol gas poured out into the room, was ignited by the fuel oil burner under this still, and the resulting flame flashed over

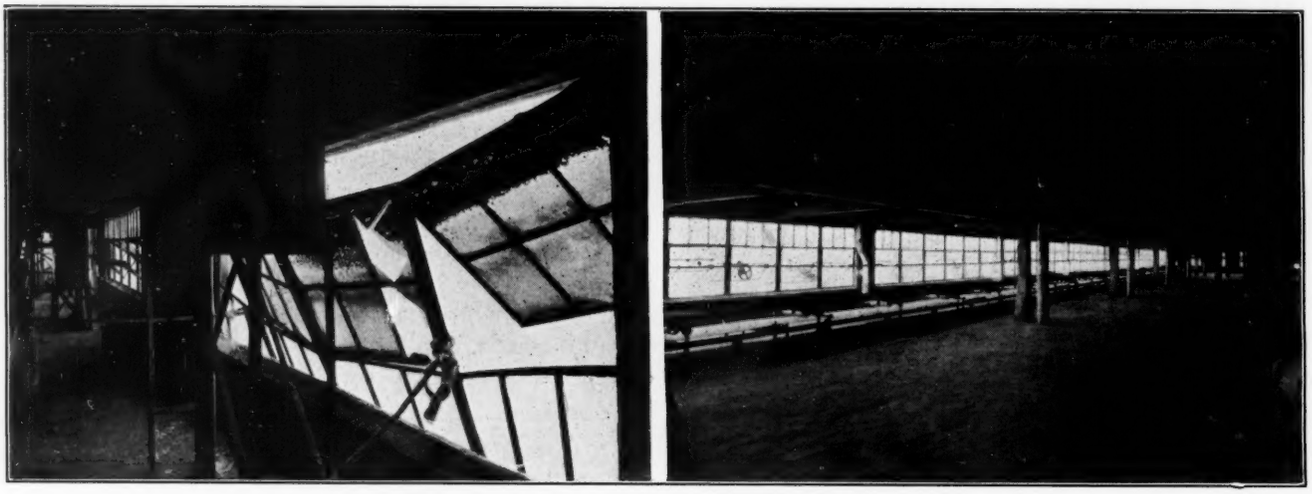
a considerable area of the first and second floors so that 24 sprinklers were opened in the first floor and four in the second floor. Immediately a flood of water poured down and completely saved the building so that the loss is zero. This building was, as you will recall, recently sprinklered, each head opened promptly and completely controlled the fire so that not even one square foot of overhead planking was scorched. It seems to me that this experience amply justifies our expenditure last winter which has, at sundry times, been questioned. I knew that you would be interested in this incident as I believe verily that without sprinklers we should have faced a serious loss in Building No. 8, with the probable complete shut-down of the beta naphthol process, an expenditure running into the hundreds of thousands of dollars, and a very serious loss of production. It further seems to me that this is a splendid example of the value of sprinklers in preventing property damage and use and occupancy loss."

Subsequent examination showed that several feet of telephone cable installed near the still in question was melted out by the fire and required replacement. This gives a striking indication of the intense heat generated by the gases but controlled by the sprinklers without damage to the building or valuable equipment.

While sprinklers are suitable for protection of a majority of plants and processes, there are several cases where they are not adaptable and a few instances where they are not desirable. However, through constant research and experiments, the science of fire prevention has kept pace with the needs of manufacturing. Industry after industry has submitted problems to the fire protection experts maintained by the mutual insurance companies, and adequate methods of protection have been devised in almost all cases.

For many years the paper manufacturers were perplexed by the problem of protecting their pulp wood piles. Finally a system was devised and found to afford the protection needed. It consisted of heavy duty monitor nozzles elevated above the ground, reinforced with ample hydrants and water supplies capable of instantly delivering several thousand gallons of water per minute at good pressure. This method permits a single yard watchman to concentrate within a few minutes a number of heavy streams on any pile, drowning the fire before it is well started.

Dust and vapor explosions have caused a heavy toll in lives and property. One of the research men of the insurance companies made a special study of these rapid types of combustion and has devised new methods of protection. During the study, visits were made to many grain elevators and actual conditions noted. The microscope was constantly employed and a relation discovered between the size of the dust particles and the violence of the explosion. A small reinforced test house was built for experiments and actual explosions duplicated for study. Self-opening windows, doors, and shutters were devised and the explosions harmlessly vented. The experiments were then moved to a larger building and the results confirmed. To-day it is known that dust explosions can be safely vented without damage to the containing buildings, if the area of the self-opening vents is proportional to the cubical contents as one is to fifty. For vapor explosions the vent area required is one-tenth of the cubical contents.

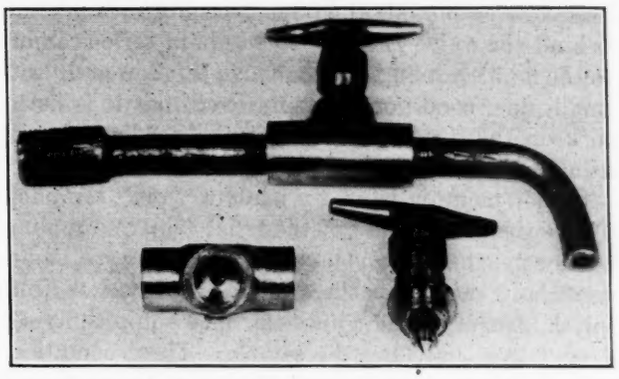


The effects of dust explosion on these two varying types of windows are plainly shown in the above photograph.

Progress in manufacturing has resulted in the introduction of new hazards. The use of enamel, japan and lacquer, increased the hazards in automobile and other plants. Severe explosions in the drying ovens caused considerable loss of property, occasional loss of life, and material loss of production. By preventing these explosions, another research engineer of the mutual insurance companies made noteworthy contributions to plant safety. It was found that vapors of inflammable liquids cannot explode when mixed with air and present in less percentages than a definite

(Continued on page 534)

Sampling *in the* Chemical Industry*



Photograph of a chrome-iron needle valve, adaptable for use in the sampling of nitric acid.

By J. H. Shapleigh
Chemical Engineer, Hercules Powder Co.

PRIOR to deciding on sampling methods it is good practice to consider the material to be sampled and the conditions of temperature, pressure, etc., present at several possible sampling locations in order to select the one most desirable. The zone of possible accident about the sampling point needs to be restricted and that zone provided with safety protection. Inspection of the location must be thorough and it should be kept in a satisfactory condition.

One must sample gases, liquids and solids, and a great variety of attendant conditions exist. Of these, pressure and temperature conditions are particularly important. The chance of accident while sampling requires similar care be taken in organizing sampling as in gauging.

The sampling station should be so designed as to allow of free movement. It should allow of egress from more than one direction. Such a provision eliminates the necessity of a man passing across the line of sampling. It should be well lighted and ventilated or under suction to remove injurious vapors.

Possibly, sampling points have been seen located at the top of open tanks in which for instance soda ash was being mixed with acid solutions. At such a time, was the fan providing suction for the mixing tanks operating? If not, was it in condition for operating? Assuming it was running, what about the soda ash feed? Was that too fast for the fan to remove the CO_2 given off from the mixture. If so, how much oxygen was present immediately above the opening of the tank? Such conditions exist and sampling is done at the open edge where a man is liable to be overcome. The sampling location should have proper ventilation. To provide otherwise caters to lack of care, a hurried job, or poor sampling. While in the latter case the object sought is not obtained, in the first two cases unsafe conditions can be either met with or created.

As in gauging, we find the question of sampling related directly to the consideration of the potential sources of trouble and how to get around them in order to safely perform the assigned task. As before, each case requires individual consideration. In one case, fumes are taken care of by suction hoods, in another, strength and choice of material provides for pressure. In each case is found a planned procedure. The personnel engaged in sampling should understand the care that has been taken to make conditions safe, and should be encouraged to know the situation surrounding their particular task.

"An ounce of prevention is worth a pound of cure" is particularly applicable to the far from routine work of sampling. The cost of properly organized sampling methods is so slight as to cause wonder at its being neglected in any well managed organization.

In tap sampling, movement of equipment is usually confined to the valve. Moving equipment always provides troubles and the valve is no exception. The sampling valve can be the object of abuse; often it is the object of neglect, but it will itself depreciate. Abuse and neglect should have no place in sampling, but it has to be given consideration in the selection of the valve. All sampling equipment requires careful selection, requires watching in service and must be kept in operating condition.

In choosing equipment for tap sampling, consideration of the type of valve is important. Sometimes gate valves are satisfactory; at other times needle valves are required. Suppose, on account of pressure, a needle valve is desirable but due to contamination such as floating particles of dirt, a larger opening is

*Address delivered before Chemical Section, National Safety Council at its Seventeenth Annual Congress, Hotel Pennsylvania, New York, October 1-5, 1928.

desired. To provide the larger opening with pressure behind the valve is likely to result in serious injury to the man sampling. If the valve is followed up with small pipe, conditions are improved, but it is better to keep the dirt from reaching the needle valve by using a screen that can be removed for cleaning.

Simple mention has been made to "tap" sampling. The other common method is "dip" sampling. Obviously, the latter is used only in open type equipment, and safety measures relate to protection from splash, danger of falling into the open equipment, and danger from handling the sample. These conditions require planning and regulation, but the problems encountered are easily foreseen and with proper instructions and reasonable care safe routine procedure can be established.

The tap method is widely used. Trouble may come from pressure, poor mechanical or sampling equipment, inexperience, blockage, freezing, or poor sampling conditions. Inexperience implies insufficient knowledge of the pertinent facts. Blockage and freezing are quite closely related to pressure, yet there is a difference in the method of handling. Both blockage and freezing of sampling lines require great care in handling. The seriousness of a case depends upon the material handled, and the ease of handling the trouble and the type of labor used. If the blockage occurs in the handling of hot or corrosive materials the problem is serious. If pressure is also a factor, it is more so. In either case, exceptional care is necessary and a responsible man should supervise the opening of such sampling lines.

A picture associated with sampling is, a workman standing in front of his sampling line, the sampling valve removed. No sample comes forth. The workman is preparing to ram a wire or rod into the pipe to remove a blockage. Have you seen the result from such methods, perhaps the man lying in a bath-tub having his burns washed and treated?

Such accidents indicate that sampling is more than a routine operation.

Sampling under light gravity pressure should be an easy task and requires but brief mention. An experienced man knows that under such conditions a moderate propelling force exists. However, does he keep fully aware of the mechanical and physical conditions of his sampling equipment. The use of a wet sampling bottle for material that water decomposes violently is an example of a poor physical condition. Worn or corroded pipe threads inviting the breaking off of the sampling line illustrate poor mechanical conditions.

The Tap Method

These accidents are likely to happen where the tap method is used. The dip method is practically free from these liabilities. Hence, where it can be used, the dip method has much in its favor.

Where higher pressure exists whether moderate or heavy the tap method is practically a necessity. Under pressure the chance for accident is present in two ways, first from conditions directly attendant with the taking of the sample under pressure and second due to the fact that the man sampling is exposed to conditions surrounding pressure equipment. The latter requires that he be aware of the chances existing for sudden leakage or blow-outs from gaskets, rivets, welded joints, gauge glass, etc.

The sampling line should be strong and properly braced to withstand pressure exerted upon it while opening a valve. The material from which the line and valve are made should be chosen with due regard to corrosion and fragility. Depending somewhat upon the pressure, the type of valve should be chosen with care such that the stream emitted is easily within control. Needle valves are particularly adopted, for sampling wherever a fairly clear liquor is present and also if a filter or screen is provided before the valve.

The Sampling Container

The container into which the sample flows should be of a wide mouth type to allow pressure release. Where the pressure back of the stream is sufficiently high to cause splash, the sample can be drawn through a shield.

In sampling, material is likely to drop upon lower levels such as floors, and splash upwards. It may break its fall upon pipe lines and on rebound reach the face level. The eyes are then in the danger zone from indirect results. Such conditions can be remedied by installing the sampling equipment in locations either free from or specially guarded from splash.

Occasionally, sample valves will not re-seat. If the material handled is one that causes particular annoyance that way, a type of valve can be installed that is double acting. One movement will give a seat grinding effect and the other movement will close the valve.

The conditions surrounding the sampling of solids are far more favorable than with liquids.

With solids the chance for accident is largely associated with motion on a different scale than with liquids. Machinery plays an important part in the handling of solids, and sampling of solids usually implies working around types of mechanism.

In general, solids will not flow as liquids do, hence, the methods used for liquids are not suitable for solids. It is usually necessary to go after the sample, to sample direct from the path of moving solid material. If this can be done in a relatively open and well protected portion of that path, conditions are relatively safe. However, plant equipment is not usually planned with an eye to providing secure sampling locations. Too often, it is necessary to sample at inadequate locations, and here we find the quick motion of sampling in its attempt to snatch solids from in front of an approaching crushing roll, or from in front of moving rolls, either type of roll just as unwilling to distinguish between a human arm and the solids being drawn into them.

In such cases there is an obvious need for well planned procedure. Such includes safety protection at every sampling point.

Before closing this discussion just a word should be added from the economic side. First, it costs but little to organize sampling methods; second, it costs less to keep them going; third it pays.

New Incorporations

(*Continued from page 470*)

Gorman, William M. Stevens, all of 150 Broadway, New York, and Abraham I. Menin, 217 Broadway, New York.

Southwestern Fertilizer & Development Co., New York, minerals. $300,000. Corp. Guar. & Trust Co., New York.

Kentucky Cement Corp., New York, commercial fertilizer, shale, sand, clay, lead, etc. 25,000 shs npv. Corp. Service Co., New York.

Disco Dyeing Corp., Paterson, N. J., manufacturing and dye printed fabric. $20,000. George Wenger, Paterson, N. J.

Clark Fosdick Co., New York, chemicals. $20,000. Masten & Nichols, 49 Wall St., New York.

Sodium Products Co., New York, sodium products, etc. $60,000. U. S. Corp., New York.

Consumers Acid Works, Inc., New York, sulfuric acid, oleum and all grades of commercial acids. 5,000 shs npv. Corp. Service Co., New York.

Klearole Laboratories, Bronx, N. Y., drugs, chemicals. $5,000. S. G. Litwin, 1776 Broadway, New York.

Clark, Fosdick Co. Inc., New York, chemicals, dyestuffs, oils, paints, etc. 1,000 pfd. $100, 1,500 com. npv. J. Cummings Haslam, 10 Woodland Ave., Mountainside, N. J.; John T. Curtis, 157 E. 51st St., N. Y.; Grenville G. Sewall, 12 Post Rd., Rye, N. Y.; Masten & Nichols, 49 Wall St., N. Y.

Double Quick Cleanser Corp., Lynchburg, Virginia, cleansing preparations. $25,000. C. L. Mason, Lynchburg, Va.

Southgate Molasses Co., Norfold, Va. D. M. Thornton, 1948 Cambridge Crescent, Norfolk, Va.

Don Valley Paper Co. Ltd., Toronto, Canada. $150,000, 5,000 shs npv. Arthur B. Mortimer, John Kennedy, Ada M. Beament.

International Kolo Ltd., Toronto, Canada, soap. $100,000 and 10,000 shs npv. Roland O. Daly, Harold E. Manning, Richard G. Meech.

Zamite Co. Inc., 784 Broad St., Newark, N. J. chemicals. 100,000 shs pfd. 1,000 shs com. Sylvester H. Williams, Essex Falls, N. J.; Augustus E. Maze, Orange, N. J.; Charles S. H. Fitz-Gerald, Union City, N. J.; Benjamin F. Jones, 784 Broad St., Newark, N. J.

Niagara Sprayer & Chemical Co., Middleport, N. Y. 15,000 shs com. Cohn, Franchot, Runals & Robillard, Niagara Falls, N. Y.

Hydrosan Corp., New York, varnishes. $20,000. S. H. Aarons, 225 Broadway, New York.

Cosmopolitan Chemical Co., New York. $100,000. S. I. Segall, 200 Broadway, New York.

Goodyear Chemical Co., New York, mercantile. $20,000. J. G. Hegt, 277 Broadway, New York.

Oxalite Corp., New York, engineers, chemists. $50,000, 2,000 shs com. U. S. Corp. Co.

Federal Chemical Co., New York. $5,000. B. Harris, 38 Park Row, New York.

Low Temperature Carbonization American Corp., Wilmington, Del., patents. $100,000. Corporation Trust Company of America, Wilmington, Del.

Who's Who In Chemical Industry

Bauer, Frank M., president and treasurer, Pfaltz and Bauer, Inc. Born New York City, 11 Aug. 1876; mar., Lee H. Ball, New York City, 22 Feb. 1906; educat., publ. schl. Pfaltz & Bauer, Inc., 27 yrs. Memb., Merchants Assn., Paint & Varnish Assn. Clubs: Masonic Bodies, Shriners, Elks, Pacific Coast, Long Beach (Calif.), Drug & Chem., Columbia Yacht. Address: Pfaltz & Bauer, Inc., 300 Pearl St., New York City.

Dreyfus, William, director of Chemical Department, West Disinfecting Company. Born, Oberedingen, Switzerland, 17 June 1869; educat., Univ. Zurich & Geneva, Switzerland, Chem. & Dr. of Science, 1894. Chem. Fertz. Co., Winterthur, Switzerland, chem., 1894-95; Nitrogen Co. Gravesebdm Eng., chem., 1895-96; Forbes, Abbott & Lenard, Ltd., Coal Tar Distillers, London, Eng., 1896-99; West Disinfecting Co., N. Y., mgr. chem. dept., 1899 to date. Memb., Amer. Chem. Soc., Amer. Public Health Assn., Amer. Electrochem. Soc., Soc. Chem. Ind., Insect. & Disinfect. Mfrs. Assn., (chmn. Standard Com.). Clubs: Chemists' (N. Y.), Swiss (pres. 1914-17). Address: West Idsinfecting Co., 16 Barn St., Long Island City, New York.

Harshaw, William J., vice president and general superintendent, The Harshaw, Fuller & Goodwin Co. Born, Cleveland, Ohio, 27 Jan. 1891; mar., Ellen Healy, 26 July 1919; children: 2, educat., publ. schls. Univ. Schl., (Cleveland), Yale Univ., McGill Univ., B. Sc., 1917. With the above co. since 1917, vice-pres. since 1925. Memb., Am. Chem. Soc., Amer. Inst. Chem. Engr., Am. Electrochem. Soc., Phi Delta Theta. Club: University, Mayfield County. Hobbies: golf, camping, fishing. Address: The Harshaw, Fuller & Goodwin Co., 1000 Newburgh Ave., Cleveland, Ohio.

O'Shaughnessy, Eugene A., vice president and director of sales, The Rossville Company, Orange Grove Refining Co., Rossville Grain Co. Born, Newport, Ky., 9 May 1894; mar., Florence E. Semrad, Chicago, Ill., 22 Dec. 1917; children, 1 son; educat. St. Xavier Coll., Cinti., Ohio, A. B., 1912. James Walsh & Co., pur. agt., 1912-16; asst. sales mgr., 1916-17; The Rossville Co., vice pres., dir. sales, 1919 to date. Enlisted 1917 as private, Commissioned overseas 1918; present status Captain, O. R. C. Specializes in interpretation of Govt. regulations for relief and advancement of the industry. Clubs: Kiwanis, Amer. Legion, Elks. Memb., Reserve Assc., and many trade associations. Hobby: books. Address: The Rossville Co., Mill & Main Sts., Lawrenceburg, Ind.

Richards, Mark A., president, Metasap Chemical Co., National Oil Products Co. Born, Atlanta, 1883; mar., Margaret Titlow, New York City, 1911; children, 2 daus.; educat., Mercer Univ., Macon, Ga., Ga. Agri. Coll., Dahlonega, Ga. Gulf Refining Co., 1911-16; Natl. Oil Prods. Co., Ill., vice pres., 1917-19; Natl. Oil Prods. Co., also Metasap Chem. Co., pres., 1919 to date. Clubs: Shriner, Maplewood Country, Forest Hill Field, Culver Lake Country, Tryon (N. C.) Country, Newark Athletic. Hobbies: business golf. Address: Metasap Chemical Co., Essex & First Sts., Harrison, N. J.

Sill, Fred Addison, chief chemist, Hercules Powder Company. Born, Kansas, U. S. A., 21 Mar. 1883; mar., Goldie Estel Cohen, San Fran., Calif., 28 Sept. 1913; children, 2 sons; educat., high schl., 1 yr. coll. Address: Hercules Powder Company, Hercules, Calif.

Weatherly, Robert Stone, assistant sales manager, Federal Phosphorus Co. Born: Anniston, Ala., 24 Sept. 1899; mar., Gladys Manning, Talladega, Ala., 25 Oct. 1925; educat., Univ. Ala., A. B., 1920. Memb., Alpha Tau Omega. Address: Federal Phosphorous Co., 930 Brown Marx Bldg., Birmingham, Ala.

Correlating the Variables in COTTON SEED

By G. S. Meloy

Senior Marketing Specialist, U. S. Dept. of Agriculture

MANY attempts have been made to classify or grade cotton seed during the past fifty years, but these efforts have met with little success. While the industry was growing from an annual crush of less than 200,000 tons to more than 6,000,000 tons of seed the fact that different lots of seed varied greatly in value became more and more evident both to crushers and to the growers of cotton.

During the World War an earnest effort was made to devise a satisfactory method of grading but the best that could be done with the information then at hand was to zone the Cotton Belt based on the average quantity of products that it was possible to obtain from the seed grown in particular regions or districts.

It was recognized that such a system penalized the grower who offered seed better than the average of his zone and at the same time gave undeserved premiums to the grower who brought inferior seed to the market, but with the information then available the plan seemed the best that could be made.

The problem of grading cotton seed has been a perplexing one for many years. The growth in the volume of the annual crush has necessitated measures being devised. Mr. Meloy tells of the work which is being done to clarify conditions.

Cotton seed crushers produce two major and two minor products from the seed. The major products are cotton seed oil and protein and the minor products are linters and hulls. The minor products are minor only in that, combined, they constitute not much over 10 or 12 per cent. of the total value of the products, whereas the oil and the cake or meal based on its protein content, together constitute approximately 90 per cent. of the value. It would seem that if we could arrange or group these two major products in order of increasing quantities the solution of the problem of grading cotton seed would be easy. But because of their variableness it has been a puzzle to the industry all these years.

Both the oil and the protein are contained within the kernel and the kernel is confined within the hulls on which the linters grow. But the kernel as well as the hulls may have variable moisture contents and the hulls may be thick or thin, dense or light. The kernels themselves may be well developed and full, or they may be poorly developed and shriveled. The season or the soil on which the seed are grown, may be good or bad, conducive to high or to low oil development. So we find the oil content of the kernels varying all the way from 25 to 42 per cent. or more. The same or other conditions may affect the protein development and we actually find the protein varying in the kernels from below 25 to above 46 per cent. At the same time the kernels themselves may vary from about 45 to 65 per cent. of the total weight of the seed and, if we take into consideration moisture above the natural and normal amount, and other forms of foreign matter, the net kernel content of seed as received at the oil mills has been found as low as 35 per cent. This means that some tons of cotton seed, as they arrive at the oil mills, contain only 700 pounds of kernels while other lots of seed may have over 1,300 pounds of kernels to the ton.

The value of a ton of seed might be measured by its kernel content were it not for the fact that a pound of oil is worth many pounds of protein. Nature has attempted to remedy this difficulty by setting up a natural correlation between the amount of the oil and the amount of the protein in the same seed. It has placed the percentage of oil in the kernels in an inverse ratio to the percentage of protein. This relation is not constant, but is so consistent that it may be put down as a rule that as the percentage of oil goes down the percentage of protein goes up, the values tending to balance one another. The net kernel content of the "as is" seed is believed to be the most accurate physical indicator of the quantative value of cotton seed. But nature has also thrown an obstacle in our path. It has made it exceedingly difficult to make a perfect separation of the kernels from the hulls. Mechanical engineers are at work on the problem, however, with every indication of suc-

cess. When the machine is made by which a representative sample of cotton seed can be taken and the net kernel content discovered, it will be possible for every seller as well as every buyer of cotton seed to determine its quantitative value.*

While waiting for the mechanical engineer to devise a perfect hulling machine other correlations have been worked out. It is comparatively easy to take a sample of cotton seed and determine chemically the percentages of oil and of protein, and from these data to calculate the pounds of oil and of protein in any lot of seed, provided we know the amount of moisture and dirt or trash that the lot of seed contains.

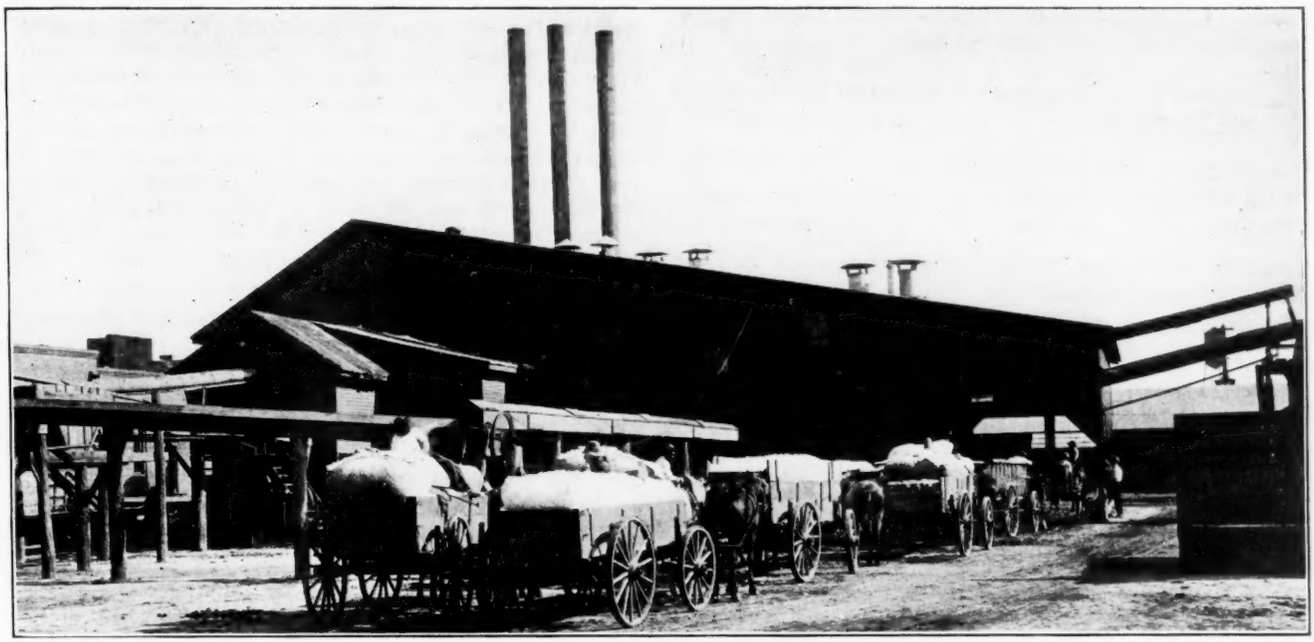
Cotton seed oil competes in the market with other edible oils both animal and vegetable. Animal products are the chief sources of edible oils and fats, consequently when there is a surplus of animal oils and fats on the market, the value of cotton seed oil is depressed. Cotton seed protein is an animal food and when there is a surplus of animal oils and fats on the market fewer cattle are fed and the value of cattle foods including cotton seed protein likewise is depressed. The value of both the oil and the protein therefore responding to the same influences has resulted in a correlation of values of oil and of protein. This ratio of value is one of oil to five of cake (41.13% protein).

With this correlation of value, the number of pounds of cake (41.13% protein), as indicated by chemical analysis, may be converted into terms of oil. Add this to the indicated pounds of oil and we have what might be called an oil-cake reciprocal. These computations have been made on the analyses of approximately 400,000 tons of seed originating in all sections of the Cotton Belt and the average oil-cake reciprocal has been found to be 555.

Suppose we assume as a standard ton, one having an oil-cake reciprocal of 555, then each one per cent. of this reciprocal, either greater of less than the standard, would be equivalent to one per cent. of the basis value. For example if a ton of seed with a reciprocal of 555 is worth $50.00, then a ton of seed with a reciprocal of 555 plus 5.55 or 560.55 would be worth one per cent. premium or $50.50 and conversely a ton with a reciprocal of 549.50 would be worth a discount of one per cent. or $49.50.

This standard ton with a reciprocal of 555 is the result of the analysis of a ton of seed showing 19 per cent. oil, 3½ per cent. of the protein equivalent, ammonia, and containing a total of 11 per cent. of moisture and other forms of foreign matter. It may also be the result of any combination of these factors, oil, ammonia and foreign matter, such as 19.2775 per cent. oil, 3½ per cent. ammonia and 12 per cent. moisture and foreign matter, or of 19.00 per cent. oil, 3.389 per cent. ammonia and 10 per cent. foreign matter and moisture.

In order to have a starting point let us go further and make the standard ton we are setting up be the result of 19 per cent. oil, 3½ per cent. ammonia and 11 per cent. foreign matter and moisture. With this as a base line three repetends follow: one for oil, one for ammonia and one for moisture and foreign matter; each multiple of which away from our standard (19 per cent. oil, 3.5 per cent. ammonia and 11 per cent. foreign matter and moisture,) will be equivalent to one per cent. of the value of the standard ton of seed. These repetends are: for oil .2775 per cent., for



A cotton gin where the fiber is separated from the seed, the fiber to be sold on its actual grade or quality and the seed on its average quality.

*Meloy, G. S. Grading Cotton Seed "As Is". The Cotton Oil Press, July, 1926. Grading Cotton Seed by Net Kernel and Fatty Acid Methods. Oil and Fat Industries, September, 1927.

ammonia .111 per cent. and for moisture and foreign matter 1.0 per cent. Each by its self may increase or decrease the value of the lot of seed and each may be offset by equal excesses or deficiencies in the other. For instance an increase of one repetend of oil together with one of ammonia would equal a two per cent. increase in value, but may be completely offset by an increase in moisture and foreign matter of two per cent. or to a total of 13 per cent.

Almost all analytical chemists report the percentage of oil, ammonia, moisture and foreign matter. With such data, if we keep in mind the analyses of our assumed standard ton (19 per cent. oil, 3½ ammonia and 11 per cent. moisture and foreign matter), and the repetends for each, the following table will assist in quickly determining the relative value of any seed as compared with the value of the standard ton.

In this table each item, above or below the basis, in each column is equivalent to a departure of one per cent. of the base value of the standard ton of cotton seed.

Equivalents of the Repetend 5.55 of the Oil Cake Reciprocal and Therefore Equal to One Per Cent. of the Value

Oil Per Cent.	*Ammonia Per Cent.*	*Foreign Matter and/or Moisture Per Cent.*
Premium		
21.7750	4.610	1
21.4975	4.499	2
21.2200	4.388	3
20.9425	4.277	4
20.6650	4.166	5
20.3875	4.056	6
20.1100	3.944	7
19.8325	3.833	8
19.5550 (a)	3.722	9
19.2775	3.611 (b)	10 (c)
19.0000	3.500 (h) Basis	11 (f)
Discounts		
18.7225 (d)	3.389	12
18.4450	3.278 (e)	13 (g)
18.1675	3.167	14
17.8900	3.056	15
17.6125	2.945	16
17.3350	2.834	17
17.0575	2.723	18
16.7800	2.612	19
16.5025	2.501	20
16.2250	2.390	21

Examples:

The oil-cake reciprocal of seed analysing as a-b-c is 577.2 (555 plus 4 x 5.55) and is therefore worth a premium of four per cent.

The oil-cake reciprocal of seed analysing as a-e-f or a-h-g is 555 (555 plus 2 x 5.55 minus 2 x 5.55) and is therefore worth the basis price.

The oil-cake reciprocal of seed analysing as d-b-c is 560.55 (555 minus 5.55 plus 2 x 5.55) and is therefore worth a premium of one per cent.

The oil-cake reciprocal of seed analysing as d-e-g is 527.25 (555 minus 5 x 5.55) and is therefore worth a discount of five per cent.

The Industry's Bookshelf

European Tariff Policies, by O. Delle Donne, 288 pages, Adelphi Co., New York.

The qualifying phrase appended to the above title is "Since the World War". He presents a scholarly and up-to-date analysis of the underlying factors which have brought about an undeniable swing of the pendulum back to strict protectionism in European tariff policies of recent years. He also points out that the chief obstacle to an early return to freedom of trade today is the strong economic nationalism which is ruling the life of all European countries. A satisfactory solution of the problem of raw materials, real currency stabilization and the assurance of lasting peace are the first indispensable conditions which must be met, according to Dr. Donne.

Money, Bank Credit and Prices, by Lionel D. Edie, 500 pages, Harper & Bros., New York, $3.50 net.

A comprehensive analysis and review of the whole subject of money and prices as they are now oriented in the flux of changing conditions of finance brought about as an aftermath of the war. Professor Edie states that his dominating aim is to extend the positive and constructive analysis of the subject. To secure this result, he restates the theory of value of money; describes the shifting sequences and amplitudes of prices, credit and production; describes the bank mechanisms of adjustments; develops the technique of analysis useful to explain and predict price movements; and finally evaluates the various plans of price control.

Oil, Its Conservation and Waste, by James H. Westcott, 213 pages, Beacon Publishing Co., New York.

In these days of struggles for oil supremacy, when battles for new fields are becoming titanic in nature, and economists, military and naval men join in predicting that oil will be the sinews as well as the cause for future wars, this book about a quieter phase of the oil problem is a very timely one. Conservation as well as new developments should be and is being stressed by the oil industry everywhere.

Problem Economics, by Dexter M. Keezer, Addison T. Cutler and Frank R. Garfield, 719 pages, Harper & Bros., New York, $4.00 net.

The title explains in part the authors' plan in offering this new approach to the study of economics for the college student. It draws its material from everyday economic problems and weaves this material into a pattern which discloses to the student the outlines of our economic system as a whole. The introductory outlines and concluding questions and problems for each chapter, should prove especially helpful.

Industrial Catayisis, by Stanley J. Green, 507 pages, The Macmillan Co., New York.

A narrowly specialized, but industrially, an extremely important region of physics and chemistry is thoroughly and technically treated in this volume. First a record of the discovery of the scientific facts is given, then it is shown how the facts have been utilized, and finally the general consequences of discovery and application are made clear.

Glycerol and the Glycols, by James W. Lawrie, 447 pages, Chemical Catalogue Co., Inc., $9.50 net.

That this is one of the American Chemical Society Monograph Series is probably sufficient. It only remains to be added that this is a thorough and scientific treatise on the production, properties and analyses of glycerol and the glycols.

PREVENTING ACCIDENTS

By Means of Education

By A. L. Armstrong
Safety Engineer, Eastman Kodak Company

A periodic class in safety education conducted during working hours, is one of the many means used by the Eastman Company in its fight to combat accidents caused by lack of knowledge amongst its employees.

EDUCATION as a means of preventing accidents will pay dividends in proportion to the effort that is put into it, providing that effort is in the right direction.

In starting this work in our plant, our plan of work or type of education came about through a desire to find the source of our troubles. We wished, first, to find the cause of accidents and, second, the best way to prevent or remove this cause. In seeking the first we also found the second. This information came from the workmen in the department. In other words, we told our men of hazards which existed and in turn got from them information which made it possible to eliminate hazards of which we had no previous knowledge.

When starting this work it was not our desire to correct a very bad accident record (comparing our record with available statistics) but rather to reduce our severity rate to the minimum.

The first thing we learned from the men was that a great many accidents were the result of a lack of knowledge on the part of the men of conditions which existed, or were caused by men in the department because of this lack of knowledge of the materials which they necessarily had to handle.

The work was started in a small way in our chemical plant and, of course was an experiment. We checked over accidents which had occurred and reproduced these, on a laboratory scale, after which we asked for discussion. There was a great deal of interest shown by all of the men and we soon increased the number of demonstrations to include static electricity and the proper adjustment and maintenance of protective equipment, the handling of caustics, acids, and solvents such as benzol, gasoline, etc., and discussed very freely with the man handling these materials the safe practices necessary to eliminate injury to the men and the plant.

One of the demonstrations which we worked up was on the handling of acids and what first aid treatment should be given in case of a bad spill which might get on an employee. To show how quickly water would remove the acid and prevent a burn, acid was poured over the hand and the hand immediately placed under running water. To impress the necessity of this type of treatment, acid was then poured over burlap to show how quickly it would burn or dissolve the burlap.

Shortly after this, one of our men working in the sulfuric acid plant started to transfer acid from one building to the other by air pressure. After turning the air onto the blow tank, he started to inspect his line for leaks. A six inch nipple opened up and he was showered with strong acid. He immediately got under the shower bath and stayed there for about three minutes. Then he found the ammonia bottle, poured ammonia over the top of his head and returned to the shower bath for three minutes more, after which he groped his way into the street, keeping his eyes closed during this time, and called for help. I saw this employee about three minutes after he had been taken to the hospital and the only place where any reaction showed was in the ear where the water had not thoroughly washed out the acid. He had no burns of any consequence and could have returned to work immediately. This is one of the very best examples of what education can do to prevent serious accidents.

Because of the nature of our work, we use a great deal of static equipment to remove static from materials and inflammable liquids. Many men will not believe that static will ignite gasoline or benzol fumes. In fact, I have seen men throw a lighted cigarette into a pan of gasoline to show how quickly it would be extinguished and how impossible it was to ignite gasoline with a spark. However, when men are actually shown that static sparks will ignite gasoline or benzol vapors, they will believe it and it is very easy after that to get co-operation in keeping the static equipment in adjustment. For demonstrating purposes we use a static machine and set up equipment on a laboratory scale the same as is used in a department, and by moving the equipment out of adjustment show how high potentials can be built up and made to jump through space, also igniting fumes from inflammable solvents. This type of demonstra-

tion is very interesting to a group of men and it is easy to get discussion and criticism of a constructive nature, which I believe is invaluable to the concern handling materials of this kind.

The argument may come up that workmen cannot be made to understand or appreciate this type of hazard because of their lack of technical training but this sort of work need not be done along technical lines. In fact, much better results are obtained by keeping away from the technical or going into the reason for static or how it accumulates.

After trying this work out in our chemical plant, we branched out into other manufacturing departments and eventually took in all of our E. &. M. foremen and gang bosses, as well as truck drivers and riggers. All of these men have to handle materials which, when not properly handled, create a hazard to the employee and we are able to impress on these men also the necessity of wearing protective clothing and equipment at all times when handling materials of this kind. It is my belief that it is much easier to get E. & M. workmen to use care when changing belts, putting in pipe or any other kind of E. & M. work when they have some knowledge of the hazard in the different departments and how necessary it is to have proper adjustment of equipment to get proper protection.

Outside Accidents Studied

We make a very careful study of accidents, fires and explosions which happen outside our plant and tell our employees how these accidents happened, where we have parallel conditions at Kodak Park and what can be done to prevent this same sort of accident in our plant. The average man will not read safe practices pamphlets and he is not interested in accidents which happen outside his own plant. Of course, there are exceptions to this rule but I believe it is pretty general among all workmen. However, they are very glad to discuss this sort of thing with someone else. A great many times they will point out conditions which exist in the plant which might be the cause of a serious accident. In fact, we have received a great many very valuable suggestions from our workmen, some of which have led us to discover hazards which we did not know existed.

Our school will accommodate about thirty employees. We have them in during working hours and spend from two to three hours with them, depending upon the size of the class. All new employees go through this school within two or three weeks after employment. After this we have them in once a year and I might add that we have found that it is advisable to handle not more than thirty employees at a time. In starting this work in a large plant, I would advise that it be tried out in two or three departments which will give the man doing the work an opportunity to install proper equipment for demonstrating purposes and make up his lecture work to fit the different groups. This man should have a thorough knowledge of manufacturing conditions throughout the plant. He should also have a thorough knowledge in regard to safe practices for handling materials which are used in the plant, such as welding equipment, ammonia cylinders, carboys of acid, drums of caustic, tank cars, and materials of this sort. It is also very necessary for him to have the confidence of the employees because without this he will be unable to get them to discuss the different conditions around the plant.

Progress is Slow

Anyone starting this type of work should not expect immediate results because it is a slow building process, but very lasting if the work is continued along the proper channels and employees have an opportunity to come in at least once a year for these talks. We have at Kodak Park approximately 6,000 employees and 112 departments which include sulfuric acid, nitric acid, cotton nitrating, steel fabricating, machine shop and carpenter shop. Out of these 112 departments we had 58 which operated during the year 1927 without a lost time accident; 1928, to date, we have 72 departments operating without a lost time accident. Our severity rate for 1927, hours lost per thousand hours worked, was 2.65; 1928, to date, 1.05.

In conclusion, it has been our experience that accidents do not occur, especially in the chemical industry, providing a man has a thorough working knowledge of conditions and we have found that the very best way to get this information to him is by giving actual demonstrations and discussing freely with him the hazards connected with his work.

Foreign Trade Opportunities

Ammonia, sulfate of	*33788	Amoy, China	Do.
Carbon waste for polishing watch jewels.	*33721	Lucerne, Switzerland.	Do.
Chemicals, heavy	†33758	Vienna, Austria	Agency.
Coal tar and light oil distilates.	*33796	Hamburg, Germany..	Do.
Insecticides	†33727	Leipzig, Germany	Do.
Lacquers and varnishes	†33728	Bremen, Germany	Do.
Oil of sweet orange	†33722	Toronto, Canada	Purchase.
Paints, automobile	*33716	Ahmedadad, India ..	Agency.
Paints and varnishes, automobile, and other paints.	*33725	Santa Cruz, Canary Islands.	Do.
Rosin	*33723	Bucharest, Rumania.	Both.
Do	*33724	Perambuco, Brazil	Agency.
Do	*33726	Goeteborg, Sweden..	Do.
Sulfur for sugar industry	*33724	Bernambuco, Brazil..	Do.
Calcium carbide, and oxygen..	†33930	San Juan, P. R.	Purchase.
Chemical specialties	†33936	Toronto, Canada	Agency.
Glue in liquid form for woodworking.	†33887	Amsterdam, Netherlands.	Purchase.
Oxides, mineral, and analyzed chemicals.	*33885	Meissen, Germany	Do.
Phosphate, rock	*33886	London, England	Do.
Poison, rat	*33929	Bucharest Rumania.	Both.
Polish, stove, liquid and paste	*33929	do	Do.
Acetic acid, edible	*34025	Petersham, England..	Purchase.
Arsenate, lead, calcium arsentate, and nicotine sulfate.	†33971	Cairo, Egypt	Do.
Chemical products	*33972	Zurich, Switzerland	Either.
Chemicals	†34071	Vancouver, Canada..	Agency.
Copper, sulfate	*33968	Bucharest, Rumania.	Do.
Insecticides	†33969	Dresden, Germany	Do.
Insecticides and deodorants	†34070	Frankfort, Germany.	Do.
Matches, paper, in books, printed.	†34012	Alexandria, Egypt	Both.
Oil, pine	†33974	Montreal, Canada	Agency.
Oils, essential, especially peppermint oil.	†33969	Hamburg, Germany..	Do.
Oxide, uranium, yellow uranium oxide, and cadmium sulfide.	*33967	Meissen, Germany..	Purchase.
Paint manufacturing materials.	†34071	Vancouver, Canada..	Agency.

Chemical Facts and Figures

Grasselli-Du Pont Merger Awaits Approval of Grasselli Directorate

Rumors of Announced Merger Had Been Current for Some Time—Grasselli to Handle All Heavy Chemicals; Du Pont Other Products—Story of Dept. of Justice Intervention Unfounded—Financial Details—Organization Complete by January 1.

Grasselli Chemical Co., Cleveland, will consolidate with E. I. du Pont de Nemours & Co., Inc., subject to approval of Grasselli stockholders at meeting, November 10. Official statement of consolidation plans as forwarded to CHEMICAL MARKETS by the offices of both companies reads as follows :

"An agreement has been entered into between E. I. du Pont de Nemours & Co. and the Grasselli Chemical Co., having as its object the consolidation of the interests of the two companies. This agreement, if approved by the stockholders of the Grasselli Co. at a meeting to be called on November 10th, provides for the retirement of Grasselli's six per cent. preferred stock on December 31, 1928 at $110 per share, plus accumulated dividends to December 31, 1928. The Grasselli company will receive, for subsequent distribution to its common shareholders, common shares without par value of the du Pont company in numbers equal to one-fifth of the number of Grasselli's outstanding common shares without par value. It is further understood that the combined heavy chemical business of the two companies will be carried on under the long-established name of the Grasselli Chemical Co., and that no important changes are contemplated in the present efficient administration of these activities.

"The interests in the Grasselli Dyestuff Corp. and other affiliated dye interests heretofore owned by the Grasselli Chemical Co. have been disposed of by the Grasselli Chemical Co. and are, therefore, not included in the present consolidation.

"It is believed that the advantages to be gained from the combined technical knowledge and experience of these two great companies will result in the more rapid development of the science of chemistry and its application to the industries of this country, and that greater economies will be assured in the manufacture, sale and distribution of chemical products.

"It is hoped that the reorganization may be completed on or before the close of the year."

The Department of Justice has already examined the plan of the merger and notified the du Pont company that there is no basis for anti-trust law action in the proposed merger. This amounts to Government approval of the merger and does away with legal obstacles. The notifications with the department went through the usual course in which the plan of the merger was submitted and studied by Government officials.

Reports that Grasselli would be merged with another company have been current in the financial district for some time and have been accompanied by a sharp advance in the Grasselli shares. The company has outstanding 746,960 shares of no-par common stock and $13,724,200 of 6 per cent. cumulative preferred. Total assets, according to the latest balance sheet, were $56,728,601.

The company manufactures heavy chemicals, fertilizers, zinc metal, zinc dust and explosives. It has factories at Meadow Brook and Weirton, W. Va.; East Chicago, Fortville and Terra Haute, Ind.; Grasselli, N. J.; Quaker Falls, Sinnemahoning, New Castle, Beaver Falls and Walford, Pa.; Lockland, Canton, Niles and Toledo, Ohio; Wurtland, Ky.; Dothan, Gadsden and Birmingham, Ala.; Seneca, Ill., and Hamilton, Ontario. Annual production of its plants is approximately 1,160,000 tons. Its properties also include zinc ores, pyrites and coal reserves.

The du Pont company has total assets aggregating $350,000,000. Its properties are located in 18 states, the most numerous group being in New Jersey and Pennsylvania.

The consolidated companies would have assets in excess of $407,440,262, based on December 31 last balance sheets. Du Pont does not publish reports of sales, but net profits for 1927 totaled $45,947,832. Grasselli's sales for last year are given as $41,922,592 and net profits at $4,567,047.

Monsanto Chemical Works Acquires Entire Stock in Graesser-Monsanto

Monsanto Chemical Works, St. Louis, plans to acquire the 50 per cent. Graesser interest in Graesser-Monsanto Chemical Works, Ltd., England, at a cost of $917,040, which would give Monsanto Chemical 100 per cent. ownership. A special meeting of stockholders will be held December 31 to vote on plan to provide funds for this acquisition. Authorized capital stock will be increased to 160,000 no-par shares, from 110,000 shares, and offering of 15,715 of the new shares will be made to stockholders of record January 2, 1929, at $50, in ration of one new share for every seven shares held.

The purchase, which has been approved by the board of directors, will, when effected, establish the Monsanto Chemical Works as the only American company to have its own plants in Europe for the manufacture of fine chemicals.

Net earnings of Monsanto after all charges and income taxes for the nine months ended Sept. 30, last, exclusive of the earnings of the affiliated company, were at the annual rate of $8.40 a share on the 110,000 shares of stock outstanding. The balance sheet as of that date shows current assets, including $1,000,000 in cash, of more than 5⅔ times current liabilities and, giving effect to the sale of 15,715 shares of new stock, a book value of over $54 a share. It is estimated that the earnings to be derived from the increased interest in the British company will more than maintain a similar earning ratio on the new stock.

Should the capital increase be approved and earnings continue at their present rate, John F. Queeny, chairman of the board, states that the board believes the declaration of a 10 per cent. stock dividend on all stock then outstanding should be made following the annual meeting in February. The company has been paying cash dividends on the basis of $2.50 a share.

Salesmen's Ass'n Elects Dorland

Salesmen's Association holds annual meeting October 17 in the Builders' Exchange, New York. The following new officers were installed: president, Ralph E. Dorland, Dow Chemical Co.; vice-presidents, Victor E. Williams, Monsanto Chemical Works, W. O. Thompson, Grasselli Chemical Co., and Robert I. Wishnick, Wishnick-Tumpeer, Inc.; secretary-treasurer, A. L. Benkert, Noil Chemical & Color Works; members of the executive committee, F. M. Fargo, Jr., Calco Chemical Co., Charles F. Kelly, Rhodia Chemical Co., and E. A. Orem, E. I. du Pont de Nemours & Co. A committee was appointed to study employment conditions within the chemical selling field and to suggest a plan for such improvement as may seem desirable.

Dr. Charles H. Herty, advisor, Chemical Foundation, Inc., opens offices as an industrial accountant in New York. At same time, he becomes special representative of the foundation.

Personal and Personnel

Herman A. Metz, of the Herman A. Metz Co., New York, is appointed chairman of the drugs, chemicals and allied industries division of the annual membership drive of the American Red Cross. Among others serving on the committee are David A. Ansbacher, William S. Gray, Charles L. Huisking, A. Klipstein, Jr., Edward Plaut, William J. Schieffelin, Jr. and G. A. Wharry.

Dr. Edward Goodrich Acheson, inventor of Acheson graphite, presents a prize fund of $25,000 to the American Electrochemical Society. The fund is to form the basis of an award every second year of a gold medal and a prize of $1,000 to any man who has made a distinguished contribution to any of the branches fostered by the society.

Dr. H. A. Gortner, chief, division of agricultural biochemistry, University Farm, and Dr. S. C. Lind, director, School of Chemistry, University of Minnesota, are selected as associate editors, The Journal of the American Chemical Society.

W. L. Filmer resigns as the Chicago district sales manager, Monsanto Chemical Works, to act as independent sales agent for various interests. The company will continue to have his advice as consultant and special representative.

Dr. P. C. Hoffman and J. C. Carroll are elected vice-presidents of Virginia-Carolina Chemical Corp., Richmond, Va., and George H. Nash, manager of the general manufacturing department.

H. B. Graves, for the past five years assistant manager, Rolls Chemical Co., Buffalo, resigns his position to become sales manager, Steel Drum Accessories Corp., of that city.

Lester McNerney, Chicago office, Pfaltz & Bauer, Inc., is transferred to California as vice-president and manager, Pfaltz & Bauer Co. of California, Inc., Los Angeles.

Dr. F. B. Kenrick, University of Toronto, is re-elected associate editor, Journal of the American Chemical Society, and appionted associate editor, Journal of Physical Chemistry.

S. S. Aiyar has left the Mysore Iron Works where he served as chief chemist and is now chemical examiner in the Customs Department, Bombay, India.

John P. Harris, Chicago representative, Industrial Chemical Sales Co., Inc., New York, moves his headquarters to 205 W. Wacker Drive, that city.

G. A. Wharry & Co., New York, is appointed representative of Naval Stores Marketing Corp., Jacksonville, Fla., handling turpentine and rosin.

Curtis R. Burnett, vice-president, American Oil & Supply Co., Newark, is elected vice-president, American Manufacturers Association.

R. F. Richard, sales manager, General Chemical Co., New York, has been accepted into membership in the Chemists' Club, New York.

Major Clifford Trotter, St. John, Quebec, is appointed managing director, Standard Clay Products Co., New Glasgow, N. S.

Winthrop M. Crane, Jr., Dalton, Mass., is elected a director, U. S. Industrial Alcohol Co.

Ass't Trade Comm. Humes Talks on the Italian Chemical Industry

"The Italian chemical industry has been going through a very critical period during the past two years owing to the depreciation of the lira", Assistant Trade Commissioner Elizabeth Humes told a representative of CHEMICAL MARKETS during her recent visit to New York. "The exchange value of the lira was down to 3.8 cents in 1926, but it has been steadily improving so that for the first six months of this year it was 5.2 cents. Due to this fact, chemical manufacturers were forced to bring down production costs in order to survive. This, in part, accounts for the tremendous consolidation movement which has been going on within the Italian chemical industry. The other important factor has been the centralization of industry policy of the Italian Government. It has been encouraging consolidation in all industries and especially in the chemical industry. Consequently, the whole tendency has been towards centralization. The small companies have been absorbed by the large. The objective has been to strengthen the large organizations so that they may be a factor in European chemical affairs. While not yet a member of the European cartel, it is probable that an understanding will be reached within the near future so that the Italian chemical industry will be included."

"During the past year, the dye industry in Italy has been loaned 50 million lira under Government supervision", Miss Humes continued. "The chemical industry has played an outstanding part in the development of the hydro-electric resources of the country. Italy's hydro-electric resources in 1913 were under two billion kilowatt hours, while in 1926, they had increased, to seven and one-half billion kilowatt hours. During that period, the chemical industry has registered a tremendous growth. In 1913, there were 219 registered stock companies engaged in the chemical business, with a capitalization of $53, 780,000. This had increased to 662 corporations, capitalized at $75,909,000 in 1926, and to 730 corporations with a capitalization of $113,252,800 in 1927. In October 1927, there were a total of 5,156 firms engaged in the chemical business, employing 97,000 operators."

"At the close of 1927, Italy had a total plant capacity of 63,700 tons of nitrogen, which included 40,000 tons of atmospheric nitrogen, 20,000 tons of nitrogen from calcium cyanamid, and 3,700 tons from by-product ammonium sulfate." Miss Humes also emphasized the fact that Italy is now paying particular attention to high analysis fertilizers, since the Montecatini group began production in 1927.

Banquet at New York

During her stay in New York, Miss Humes was tendered a luncheon in the Hotel Biltmore on October 4. Among those present were F. M. Becket, Electro Metallurgical Co.; Dr. W. C. Landis, American Cyanamid Co.; Dr. C. O. Curme, Jr., Niacet Chemicals Corp.; Williams Haynes, CHEMICAL MARKETS; H. W. Smith, Union Carbide Co.; H. Craig, *Oil, Paint and Drug Reporter*; R. E. Dorland, Dow Chemical Co.; C. P. Townsend, Byrnes, Townsend & Brickenstein; August Merz, Synthetic Organic Chemical Manufacturers Association; Col. W. S. Weeks, Calco Chemical Co.; R. W. White, Carbide & Carbon Chemicals Corp.; H. C. Parmelee, *Chemical and Metallurgical Engineering*; Samuel P. Rigney, Roessler & Hasslacher Chemical Co.; James F. Hodgson, Department of Commerce; C. A. Mace, Synthetic Organic Chemical Manufacturers' Association; Stanley Williamson, National Carbon Co.; Ralph J. Flood, Department of Commerce; A. A. Teeter, Chas. Pfizer & Co.; Hon. F. J. N. Kracke, United States Appraiser, Port of New York; W. F. Barrett, Linde Air Products Co.; Dr. Leo Baekeland, Bakelite Corp.; Walter C. Teagle, Standard Oil Co. of New Jersey; and A. Cressy Morrison, chairman, Chemical Advisory Committee to the Department of Commerce.

A. C. S. Syracuse Intersectional Meeting

American Chemical Society holds seventh intersectional meeting at Syracuse, N. Y., October 19 and 20. Symposiums on organization of industrial research and cellulose were held.

Those who took part in the symposium are C. E. K. Mees, director of research and development. Eastman Kodak Co., Rochester, N. Y.; Charles M. A. Stine, chemical director, E. I. du Pont de Nemours & Co., Wilmington, Del.; Prof. John Johnston, director of the department of chemistry, Yale University; W. R. Whitney, director of research, General Electric Co., and Thomas Midgley, Jr., research chemist, Dayton, Ohio.

Speakers and their topics included Clayton C. Spencer, Syracuse University, "Acetolysis of Cellulose"; H. LeB. Gray, superintendent, organic research laboratory, and C. J. Staud, organic research chemist, Eastman Kodak Co., Rochester, "Cellulose"; F. H. Rhodes, professor of industrial chemistry, Cornell University, "The Detergent Power of Soap"; H. L. Davis, professor of chemistry, Dickinson College, Carlisle, Pa., "Boiling Point Determinations."

Other speakers were A. Nietz and R. H. Lambert, research chemists, Eastman Kodak Co., "The Effect of Some Factors on the Ring Method for Determining Surface Tension"; Ernest Huff, research chemist, Carborundum Co., Niagara Falls, N. Y., "The Preparation of Pure Selenic Acid"; A. W. Browne, professor of inorganic chemistry, Cornell University, "Oxidation," and A. W. Burwell, vice president, Alex Chemical Corp., Niagara Falls, "Synthetic Fatty Acids."

Paint and Varnish Makers Meet

American Paint & Varnish Manufacturers' Association holds convention at Detroit, October 15 and 16. The following officers were elected for the coming year: president, Elliot S. Phillips, president. Devoe & Raynolds Co., New York; vice-presidents, Frank L. Sulzberger, Enterprise Paint Manufacturing Co., Chicago, and Frank B. Cheesman, Cheesman Elliot Co., Brooklyn; secretary, George B. Heckel, Philadelphia; treasurer, H. L. Wilkinson, Debevoise Co., Brooklyn. The following directors were elected:—B. J. Cassady, Pittsburgh Plate Glass Co., Pittsburgh; L. H. Conklin, Flood & Conklin Co., Newark, N. J.; W. C. Dabney, Jones, Dabney Co., Louisville; A. D. Graves, Pratt & Lambert, Inc., Buffalo; J. Sibley Felton, Felton Sibley & Co., Philadelphia; H. A. Hall, Boston Varnish Co., Boston; R. W. Levenhagen, Glidden Co., Cleveland; H. A. Melum, Benjamin Moore & Co., Chicago; C. B. Woodruff, W. P. Fuller & Co., San Francisco.

Niagara Sprayer & Chemical Co., Inc., is formed in Middleport, N. Y., to take over properties and business of Niagara Sprayer Co. and its affiliated company, the Niagara Chemical Co., Inc. Company has plants at Middleport, Jacksonville, Fla., San Francisco, and Burlington, Ont. Officers are president, A. H. Schoellkopf; vice-president and general manager, J. B. Carey; vice-president and sales manager, Ernest Hart; secretary-treasurer, B. E. Vosteen.

Prescott & Co., Montreal, announces that its former principals, Societe Anonyme des Matieres Colorantes et Produits de Saint Denis, Paris, France, has cancelled its selling agreement. The latter company has amalgamated with the I. G. and its products will now be handled by the Consolidated Dyestuffs Corp. of Canada. Prescott & Co. plans to secure another connection.

Publicker Commercial Alcohol Co.'s plant is wrecked by fire, October 28, causing two deaths, a property loss estimated at $2,000,000 and injuries to five others. The origin of the fire is unknown, but it destroyed almost 750,000 gallons of alcohol, causing a loss of approximately $1,500,000, while damage to the buildings was placed at an additional $500,000.

News of the Companies

Bettendorf Oxygen-Hydrogen Co., Davenport, Ia., merges with Air Reduction Sales Co., New York. Former company maintains warehouses at Cedar Rapids, Dubuque, Galesburg, Burlington and Centerville, while latter has warehouses in Des Moines and Peoria.

U. S. Industrial Chemical Co., Inc., New York, publishes a handsomely-bound booklet entitled "Solvents," which also includes cotton solutions and plasticizers, and specifications, technical data and general information for the lacquer manufacturer.

Roessler & Hasslacher Chemical Co. presents gold watches to fifteen employees in recognition of twenty-five or more years service with the company. Awards were made at a banquet held at Masonic Temple, Perth Amboy, N. J., October 24.

American Potash & Chemical Corp., New York, issues a very attractive and well-illustrated booklet describing its operations at Searles Lake called "A Description of the Plant, Process and Products of the American Potash & Chemical Corp.

Bound Brook, N. J., plant of Sherwin-Williams Co., is damaged by fire to extent of $100,000 on October 11. Fifteen buildings, including insecticide and arsenic plants, were completely destroyed. The acetic acid plant was saved.

Sharples Solvents Corp., Philadelphia, files complaint with Interstate Commerce Commission seeking lower freight rates on carload shipments of casinghead gasoline from Oklahoma to its amyl alcohol plant at Belle, W. Va.

Monsanto Chemical Co. announces that Frank T. Robinson succeeds W. L. Filmer, resigned, as Chicago district sales manager. He will be assisted by F. C. Renner, transferred from the St. Louis office, as general representative.

Atlas Powder Co., Wilmington, Del., plans erection of nitrate plant unit at Reynolds, Pa., comprising several buildings which will cost approximately $450,000 with equipment.

Mathieson Alkali Works, Inc., New York, publishes a booklet entitled "Straight Facts about Straight Alkali", copies of which may be obtained by applying to the company.

Kalbfleisch Corp., New York, publishes new illustrated chemical catalogue, copies of which may be obtained upon application at the New York offices of the company.

Pennsylvania Salt Manufacturing Co. announces the acquisition of an electrolytic process for the manufacture of pure ammonium persulfate.

Kentucky Alcohol Corp. and National Distillers Products Corp. move executive offices from 30 Broad Street to 52 William Street, New York.

Charles Pfizer & Co., Inc., Brooklyn, plans erection of new seven-story building estimated to cost more than $350,000 with equipment.

Paint and varnish division, E. I. du Pont de Nemours & Co., publishes a new edition of the du Pont paints, varnishes, enamels and Duco.

E. de Haen Works of the J. D. Riedel - E. de Haen A. G., Seelze, Hanover, Germany, is damaged by fire September 12.

Good Progress in Dye Manufacture for 1927 Reported by Tariff Comm.

The American dye industry supplied approximately 94 per cent. of the requirements of the United States in 1927 and produced also an exportable amount of more than 26,000,000 pounds of dyestuffs, reports the Eleventh Annual Census of Dye and Other Synthetic Organic Chemicals.

In calling attention to the marked progress made in the industry, the Commission's report explained that in 1913 only 13 per cent. of dyes consumed in the United States were produced in this country, and those produced were derived chiefly from imported intermediates. Many new and important dyes have been produced in the United States in the course of the development of the industry, it was added.

The report shows that during 1927 the domestic dye and organic chemical industry made marked progress. Production of over 95,000,000 pounds of dyes exceeds that of any previous year in the history of the domestic industry. American dyes supply approximately 94 per cent. of our requirements and in 1927 there was in addition an exportable surplus amounting to over 26,000,000 pounds, as compared with 1913 when only 13 per cent. of the dyes consumed were produced in this country, chiefly from imported intermediates. The domestic industry has not been content merely to follow in the footsteps of the older dye-producing nations but has developed many new and important dyes.

In 1927 considerable progress was made in the manufacture of fast and specialty dyes, including those for dyeing rayon and mixed fabrics. The production of vat dyes established a new record in that year, with a total of over 5,960,000 pounds, as compared with 4,030,000 pounds in 1926. This class of dyes was not made in the United States prior to the World War.

The production of coal-tar dyes by 55 firms in 1927 was 95,167,905 pounds, an increase of eight per cent. over the previous year's production. Sales in 1927 totaled 98,339,204 pounds, valued at $38,532,795, at a weighted average of 39 cents per pound, or three cents per pound less than the corresponding average price during 1926. The average price in 1917 was $1.26 per pound. Competition between manufacturers has been severe and 38 firms have gone out of business since 1919.

Imports of dyes during 1927 were 4,233,046 pounds, with an invoice value of $3,413,886 representing a decrease of 10 per cent. by quantity, and 16.5 per cent. by value from that of 1926.

Exports of dyes in 1927 showed an increase in quantity but a decline of eight per cent. by value from that of 1926.

Severe competition among the dye-producing nations of the world continued throughout 1927, as it has for several years past. In time the cartel arrangements entered into by the dye industries of foreign countries will doubtless check this excessive, international competition. These agreements have as their main objects the division of the world's markets, the limiting of production, and the stabilization of prices.

Foreign Agreements in 1927

A number of agreements were negotiated in 1927 between important foreign dye manufacturing groups. The most important of these was the Franco-German dye agreement which was entered into by groups representing virtually the entire dye industries of both countries. In these negotiations the Governments of both countries conferred constantly with the two groups.

The quantity of dyes exported from Germany in 1927 was less than half the quantity of exports in 1913, but the value shows an increase of seven per cent. in 1927 over the pre-war year. The decrease in volume and increase in value of dye exports are due to heavy shipments of high-priced dyes and to a loss in exports of low-priced bulk colors. Export statistics, taken alone, do not disclose the actual participation of Germany in international trade as she controls or has an interest in dye plants in Japan, Spain, Italy, the United States, and Russia.

No announcement has been made of British producers entering into any international dye agreements and it is considered unlikely that any such agreements will be concluded.

The three principal Swiss manufacturers have plants established in Germany, France, England, Italy, Poland, and the United States. These plants — owned and operated jointly — supply large quantities of dyes direct to consumers in their respective localities. About 90 per cent. of the Swiss dye production is exported. Exports of all dyes in 1927 were greater than in 1926 but exports of indigo continued to decline.

The dye industry of Italy now supplies the domestic needs of the cheaper bulk colors and has an exportable surplus.

A special feature of the 1927 Census of Dyes and Other Synthetic Organic Chemicals is a section devoted to the discussion of synthetic medicinals.

Synthetic medicinals are of far-reaching importance to the health of the nation and their manufacture in this country should be encouraged by all legitimate means. Without these products the cure of many diseases would be difficult and in some cases would be virtually impossible.

Only a few of the individual medicinal products can be mentioned here, as for example, luminal and barbital, which are important sedatives. The former is very valuable in the treatment of epilepsy. Arsphenamine, one of the coal-tar medicinals, is of the greatest importance in treating venereal diseases. The present price of arsphenamine manufactured in the United States to the government is 18 cents per ampoule as compared with $3.50 per ampoule, the pre-war price of the German imported product. In the past decade, America has given to the world many new and valuable synthetic medicinals, including such products as apothesine, butyn, butesine, and tutocain, which are used in modern medicine as local anesthetics. Ethylene has been known to chemists for many years but only recently has its value as a general anesthetic been demonstrated. The application of certain dyes for medicinal purposes has been a noteworthy advance. These dyes have antiseptic and germicidal properties which are claimed not to retard the natural healing process.

Synthetic Resin Production Up

Synthetic resins are being made in increasing quantities in the United States. Production in 1927 by seven firms was nearly 13½ million pounds. These resins are used as binders in the production of moulded insulation products generally employed for automobile and radio parts. Another important use is in the manufacture of varnishes and lacquers for insulation purposes.

Expansion in the domestic production of synthetic aliphatic chemicals is unparalleled. The United States is developing the manufacture of aliphatic chemicals as Germany developed coal-tar organic chemicals.

The aliphatic chemicals have wide uses including among others solvents, medicinals, perfumes, flavors, rubber accelerators, flotation agents, photographic developers and explosives. One of the principal uses of these non-coal-tar synthetic organic chemicals is as solvents in the manufacture of nitrocellulose varnishes and lacquers. From butanol an important solvent, large quantities of butyl acetate are made and this finds wide application in the manufacture of celluloids, lacquers, photographic and moving picture films, artificial leather, automobile finishes, and other products.

Methanol and Ethylene Glycol

Another important synthetic chemical of non-coal-tar origin now made in the United States is methanol or methyl alcohol. This product was produced in the United States in 1927 by two companies.

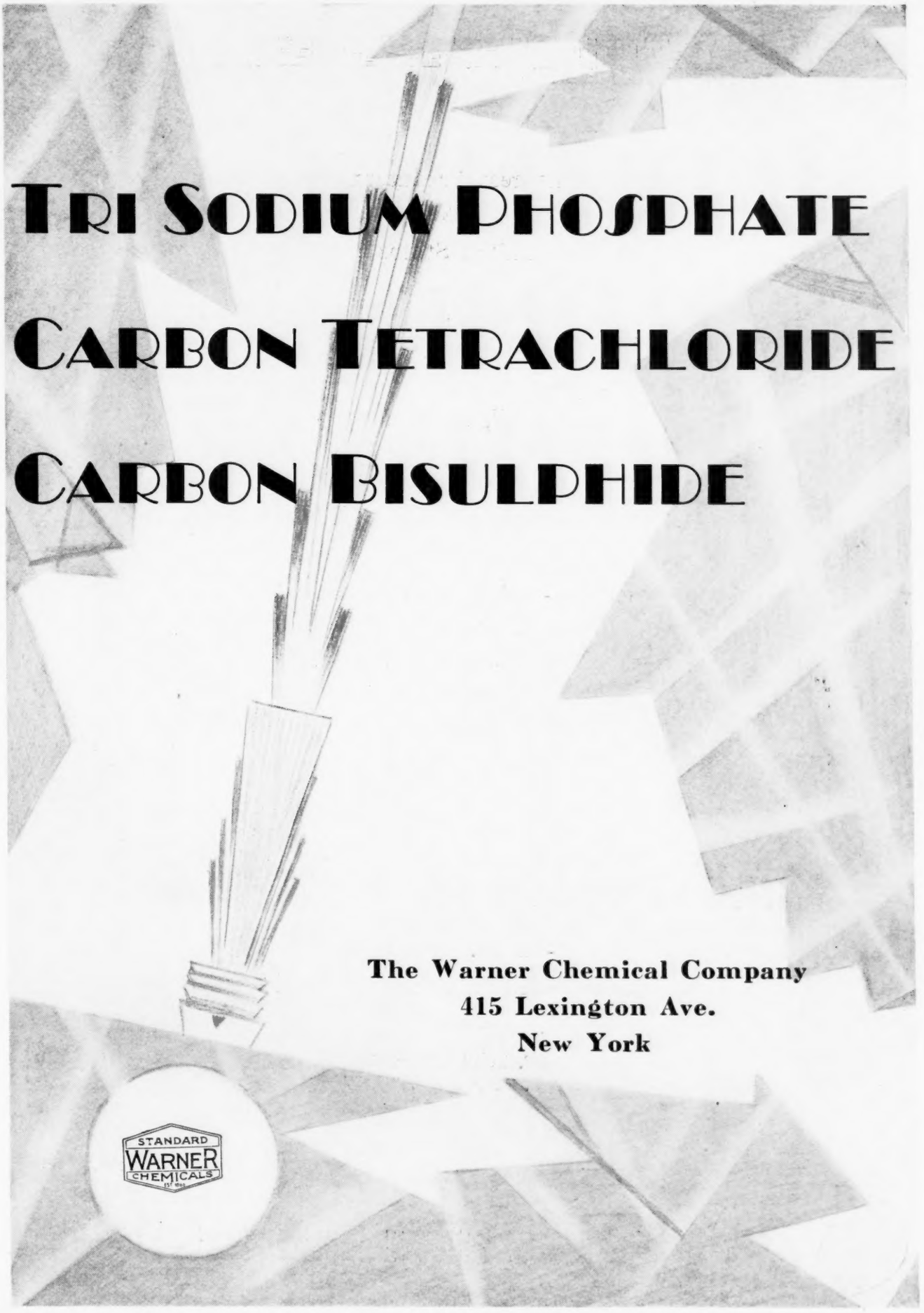
Ethylene glycol is an outstanding chemical of this group. Its largest use is as an ingredient of low freezing dynamites, for which purpose it is estimated that 9,000,000 pounds were used in 1927.

Production of synthetic organic chemicals other than those derived from coal-tar was 280,992,825 pounds, an increase of 31 per cent. over the output of 214,842,513 pounds in 1926. Sales in 1927 amounted to 201,548,089 pounds, valued at $36,600,628.

TRI SODIUM PHOSPHATE

CARBON TETRACHLORIDE

CARBON BISULPHIDE



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Second Bituminous Coal Conference Opens Nov. 19 at Carnegie Tech.

More than a hundred speakers representing twelve countries are tentatively listed to present papers at the Second International Conference on Bituminous Coal to be held under the auspices of the Carnegie Institute of Technology in Pittsburgh, November 19 to 24, 1928, according to a preliminary program announced by President Thomas S. Baker.

According to the plans, ten major subjects are listed for discussion in addition to the addresses of a general nature to be presented by Georges Claude, the eminent French scientist, Professor Fritz Hofmann, the German scientist who makes synthetic rubber from coal, Dr. F. zur Nedden, Germany, F. G. Tryon, U. S. Bureau of Mines, and others.

Major subjects to be discussed, will include "Pulverized Fuel", "Gas Production", "Liquefaction and Hydrogenation", "Fertilizers", "Origin, Composition and Classification of Coal", "High Temperature Carbonization", "Combustion in Furnaces", "Purification and Cleaning", "Tars and Oils", and "Low Temperature Processes."

As indicated in the list of major topics, the chief purpose of the coming conference will be to present the results of recent studies of coal that have to do with improved methods of utilization and combustion. The list of speakers includes the world's leading authorities on the latest developments in improved utilization of coal as a source of energy and power.

Germany will apparently be represented by the largest delegation with about twenty of her most distinguished scientists and engineers in attendance. France, England, and Canada will also be represented by comparatively large numbers of scientists who have been identified with the latest discoveries in coal research. Other countries that will be represented on the program of speakers are Russia, Italy, Japan, Austria, Denmark, Belgium, and Jugo-Slavia. In addition, delegates have been appointed to represent governments and scientific organizations in Chile, Cuba, Czecho-Slovakia, Norway, Poland, Roumania, and Spain.

Approximately sixty of the 103 speakers already listed to participate in the proceedings, will come from outside of the United States.

Dr. H. T. Clarke resigns from the research laboratory of the Eastman Kodak Co., with which he has been associated for the past fifteen years, to accept a position as head of the department of chemistry in the college of physicians and surgeons at Columbia University.

Dr. Clarke organized and directed the department of synthetic organic chemistry of the Eastman Kodak research laboratories from its inception until he left the company. He is well known as one of the editors of the "Organic Synthesis" series. He is also the author of a handbook of organic analysis, of which the fourth edition recently appeared. He has been for several years one of the councillors of the Rochester section, American Chemical Society, and has served as chairman of that section. He was also chairman of the organic division of the society.

Wallace Brett Donham, dean, School of Business Administration, Harvard University, is elected a director and also chairman of the finance committe, Royal Baking Powder Co. W. W. Stanley has been appointed financial assistant to Donald K. David, executive vice-president, and Ellsworth Bryce has joined the company's sales division.

Davison-Pick Fertilizer Co. begins construction of addition to plant at Gretna, La. Improvements will cost approximately $150,000 and will double output of plant, increasing it to 45,000,000 tons per year.

Binney & Smith Co., New York, publishes a very attractive book of forty-five pages entitled "Black Magic", being the story of Binney and Smith Co., and 200 tons of smoke a day.

P. Samuel Rigney Dies Suddenly

P. Samuel Rigney, secretary, Roessler & Hasslacher Chemical Co., New York, while at Niagara Falls on a business trip, dies suddenly, October 23, aged 56. He was born in Orange county, New York, December 23, 1872. He studied law in Newburgh, N. Y., where he practiced his profession until 1918, when he joined the Roessler & Hasslacher Chemical Co. as assistant-treasurer. About a year ago, he was elected secretary of the company.

He represented his firm in many associations of the chemical industry and was treasurer of the Chlorine Institute, vice-president of the Compressed Gas Manufacturers' Association, vice-president of the Snythetic Organic Chemical Manufacturers' Association, and a member of the executive committee of the Drug and Chemical section, New York Board of Trade and Transportation.

He was also secretary, Perth Amboy Chemical Works; secretary, Niagara Electro Chemical Co.; assistant treasurer, Niacet Chemicals Corp.; and secretary, R. & H. Platinum Works, Inc. He belonged to the United Spanish War Veterans, the Orange County Society, and the Siwanoy Country Club.

James W. Elms Dies Abroad

James W. Elms, assistant general manager, Paint, Lacquer & Chemicals Department, E. I. du Pont de Nemours & Co., dies October 18, in Paris, France, while on a business mission abroad for the company. He was born in Dover, Maine, in July 1885 and was graduated from the University of Maine in 1906 with the degree of chemical engineer. Upon his graduation, he was employed as a chemist in the General Electric Co.'s laboratory at Lynn, Mass. He became associated with the du Pont company in June 1907, as chemist in the Haskell plant of the Smokeless Powder Operating Department, advancing steadily to assistant manager. Early in the World War he was transferred to the Carney's Point plant as superintendent and from there to the Engineering Department as an assistant manager in the construction and operation of the Old Hickory powder plant.

After the war he became assistant director of the du Pont Chemical Co. and later division manager of the chemical products division of the company at Parlin. In 1925, he became division manager of the Philadelphia works of the Paint, Lacquer and Chemicals Department, and finally assistant general manager of the department, which position he occupied at the time of his death.

Benjamin H. Ring, trade sales manager at the Everett, Mass., plant, E. I. du Pont de Nemours & Co., dies Oct. 8, at his home in Wollaston, Quincy, Mass. He was born at East Boston, December 25, 1880. He entered the paint industry with the old Boston jobbing house of J. A. & W. Bird & Co. He later became connected with the Pittsburgh Plate Glass Co. and from that firm went to Harrison Bros. Co., Philadelphia. When this business was taken over by the du Pont company he continued to cover his old territory until January, 1923, when he was made trade sales manager.

William A. Stopford, of Parsons & Petit, New York, chemical brokers, dies in Mountainside Hospital, Montclair, N. J., October 30, as the result of injuries incurred in an automobile accident. He was sixty years of age, was born in Brooklyn, N. Y., and for the past twenty years had made his home in Montclair. He was a member of the Drug & Chemical Club, New York, the Montclair Athletic Club, and the Upper Montclair Country Club.

Agreement Between Standard Oil and I. G. Reported by Tariff Commission

An agreement between the Standard Oil Company of New Jersey and the I. G., is reported to provide for the acquisition by the Standard company of the North American rights to a process for obtaining oil from coal, and for an exchange between the companies of knowledge gained from manufacturing experience in oil technology, according to the United States Tariff Commission.

The full text of a section of the Commission's census on German dyes and chemicals follows :

There are about 620 chemical stock companies in Germany with a total capital of about 1,853 billion marks. Eighty-one of these companies are associated with the I. G. Sixty-two per cent. of the total capital is held by the I. G.; this is an understatement of the importance of the I. G. to the German chemical industry, as a large number of its subsidiary companies have more capital than their published figures show.

An agreement between the Standard Oil Company of New Jersey and the I. G. is reported to provide for the acquisition by the Standard Oil Company of the North American rights to the I. G.'s process of producing oil from coal, and for an exchange between the companies of knowledge gained from manufacturing experience in oil technology. During 1927 the I. G. concluded agreements with the French dye industry and with the Norsk Hydro, the Norwegian nitrate and hydro electric power company. A license was obtained from an American company to manufacture titanium white in Germany.

Apropos of reported plans of the I. G. to complete negotiations for the purchase of American chemical companies, is the announcement of its amalgamation, through the Agfa Company, with the Ansco Company of America, and the amalgamation of the Sterling Products Company and subsidiaries with the United Drug Company. The subsidiaries of the Sterling Company, in which the I. G. has recently acquired additional holdings, are the Bayer Company, H. A. Metz & Company, Winthrop Chemical Company, and the Wyeth Chemical Company.

At a general meeting of the I. G. on January 13, 1928, 249 stockholders, with 712,672,500 marks capital, were represented. This meeting authorized an issue of bonds to the value of 250, 000,000 marks. The new bond issue, representing an increase of nearly 25 per cent. in capital, is intended for the development of synthetic oil and fixed nitrogen plants. By issuing bonds instead of stocks, the I. G. will avoid a burdensome capital tax and the bondholders will later be permitted to exchange their bonds for stock. The I. G. has at its disposal for this purpose nearly 100,000,000 marks in unissued shares.

As the company does not appear to be in immediate need of new capital, payments for the bonds are to be spread over 1928. The first payment of 10 per cent. will fall due on March 15, 1928, and the others of 30 per cent. each on the 15th of June, September, and December. This arrangement will facilitate absorption in Germany and perhaps allow for a possible placement in the United States. By granting priority rights to common-stock holders, who will have the right to take up one bond for each four shares held, the new capital will be kept largely in German hands.

Interest on the new bonds will be at least six per cent. Bonds can be exchanged at any time for common shares for 50 per cent. of the nominal value. A period of 14 years is available for the exchange according to the option of the owner at a rate falling from 200 per cent. in 1928 to 100 per cent. in 1941.

New York section, American Association Textile Chemists and Colorists, holds regular monthly meeting, October 26 at the club rooms of the Building Trades Employers' Association, New York. Speakers were Dr. W. T. Anderson, Hanovia Chemical Manufacturing Co., and W. D. Appel, Bureau of Standards.

Paint, Oil & Varnish Club of Baltimore holds regular monthly meeting, October 12, at Hotel Rennert. Horace Felton, vice-president, Felton-Sibley Co., Philadelphia, addressed the meeting.

Cottonseed Trade Practice Meeting

At the recent trade practice conference for the cottonseed industry, conducted by the Federal Trade Commission, to eliminate unfair methods of competition, rules were adopted governing sales policies, prices and branding of products.

Of 13 rules adopted, five were approved by the Commission and the remaining eight accepted as expressions of the trade. The rules approved by the Commission deal with price discriminations, prices charged for products and accurate branding of these products.

The rules accepted as expressions of trade concerned contracts for purchase of cottonseed, and other policies regarding buying and selling under pre-dated contracts. It was recommended that a uniform practice contract and account sales form be used in all transactions.

Approximately 95% of the industry was in attendance at the meetings, over which Commissioner McCulloch presided.

Tariff Commission on Sodium Phosphate

Preliminary phases of proposed investigations by the Tariff Commission into foreign and domestic production costs of flaxseed and sodium phosphate have been completed and hearings are to be scheduled shortly, according to an announcement of the Commission. The Commission, it was explained, will not be able to take up these two pending matters until after the corn investigation has ended. That investigation is now before the Commission for final consideration and report to the President.

Upon completion of this matter, the Commission, it was stated, is planning to turn its attention to the flaxseed and sodium phosphate cost inquiries.

William Hamlin Childs Dies

William Hamlin Childs, chairman of the board, Bon Ami Corp., and a director of many other corporations, dies November 2, aged 71. He was formerly president of the Barrett Co. and following the absorption of the company by the Allied Chemical & Dye Corp., he became vice-president and director of the latter, a position he held for many years.

He was born in Hartford, Conn., March 7, 1857 and was educated at Hartford High School, being graduated in 1874. His first position was with the Barrett Co. and he was associated with it for twenty years, becoming president. He was a Commodore in the Indian Harbor Yacht Club, and member of the Blind Brook, the Union League, the Whitehall, and the Montauk Clubs.

Fertilizer manufacturers, members of the National Fertilizer Association, located in districts one and two, hold meeting at Vanderbilt Hotel, New York, October 15. E. L. Robins, Meridan, Miss., president of the Association, acted as chairman of the meeting which was attended by about forty members, Short talks were given by Charles J. Brand, Washington, secretary of the Association; F. H. Whipple, Hartford, Conn., and James S. Coale, Philadelphia, chairmen of districts one and two respectively.

A. E. Nye, senior partner of Marble-Nye Co., Worcester, Mass., dies suddenly October 4. The company is one of the oldest in New England, being established in 1773, and represents in that territory the Hooker Electrochemical Co., Diamond Alkali Co., and American Potash & Chemical Co.

Secretary of the Treasury Mellon has notified the Collector of Customs at New York that "crushed gypsum is duitable at the rate of 30 per cent. ad valorem under the provision in paragraph 214 of the tariff act, for 'earthy or mineral substances wholly or partly manufactured.' "

Oil Chemists' Meets at New York

American Oil Chemists' Society holds semi-annual meeting in New York, October 25 and 26. Among those who delivered papers were Sydney Musher, Pompeian Olive Oil Co., Baltimore; M. F. Lauro, New York Produce Exchange; J. S. Abbott, Institute of Margarine Manufacturers; Prof. Arthur W. Thomas, Columbia University; Dr. M. B. Graff, Proctor & Gamble Co.; R. B. Trusler, Mellon Institute; S. N. Cummings, Pylan Products Co.; I. G. Priest, U. S. Bureau of Standards; Norman J. Thompson, Associated Factory Mutual Fire Insurance Companies; Herman Aspegren, Portsmouth Cotton Oil Refining Corp.; A. P. Lee, John Rutzler, Jr., and Oscar Wurster.

Flourspar Duty Increased

President Coolidge issued October 17, a proclamation under the flexible provisions of the Tariff Act of 1922 increasing the rate of duty on imports of fluorspar containing not more than 93 per cent. of calcium fluoride from $5.60 to $8.40 per long ton. The proclamation becomes effective 30 days from October 17 the date of proclamation.

In a statement made public by the White House, October 17, in connection with the proclamation, it was stated that the Tariff Commission had reported to the President, that the increase was necessary to equalize the difference in the cost of production of fluorspar in the United States and England, the principal competitor.

Lord Melchett, chairman, Imperial Chemical Industries, Ltd., was the principal speaker at a dinner to pioneers of American Industries, October 24, at the Hotel Astor, New York. Henry Ford, Orville Wright, Thomas A. Edison, Charles M. Schwab, Julius Rosenwald, George Eastman and Harvey S. Firestone were present as guests of honor. Following the dinner Lord Melchett boarded the S. S. "Aquitania" and sailed for England after a visit of nearly a month to this country and Canada.

Dr. H. J. Rose is presented with Grasselli Medal for 1928 at joint meeting of American section, Society of Chemical Industry; New York section, American Chemical Society; and Societe de Chimie Industrielle, at the Chemists' Club, New York, November 2. Dr. A. C. Fieldner, U. S. Bureau of Mines, made the presentation. Dr. Rose read a paper on "Coal" and Prof. J. T. Ward one on "Coal as a Source of Energy".

Fourth annual Southern convention, National Fertilizer Association, will be held at the Hotel Atlanta-Biltmore, Atlanta, Ga., November 13 and 14. Meetings of the board of directors and the soil improvement committee will be held November 12. The three major topics for discussion will be "Trade Practices", "Rationalization of State Inspection and Control", and "The Nitrogen Situation."

Allied Paper Co., Montreal, is to be formed by projected merger of Lincoln Paper Mills, Georgetown Coated Paper Mills, and Ritchie and Ramsay, thus making the resultant company one of the four largest in the fine paper field in Canada.

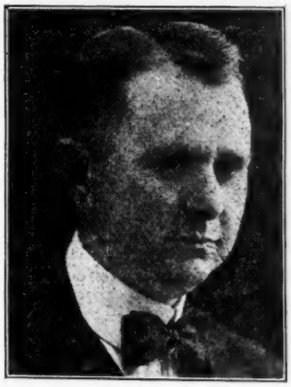
Davison Realty Co. is formed to dispose of Davison Chemical Co. property in the vicinity of Curtis Bay, Md. The property will be subdivided and homes built upon it to be rented or sold to Davison employees.

Among the mail carried by the Graf Zeppelin were 2,200 invitations to prominent business men throughout this country to attend the Leipzig Trade Fair in March 1929.

William L. Hawes, chemical engineer, du Pont Eastern Laboratory, Gibbstown, N. J., resigns to become associated with Carbide & Carbon Chemicals Corp., Charlestown, W. Va.

Beale New Pennsylvania Salt Head

Leonard T. Beale is elected president of Pennsylvania Salt Mfg. Co., Phila., at the annual election of officers held in October.



Mr. Beale who was formerly a vice-president of John T. Lewis & Bros. Co., Phila., closely associated with the National Lead Company, succeeds Miers Busch.

According to reports, the W. P. Gest Committee of directors won the contest for control of Pennsylvania Salt Mfg. Co. upon agreement to withdraw two candidates, John J. Tully and Horace E. Smith, who favored Miers Busch for re-election as president. Proxies totaling 122,528 shares of stock were cast, all in favor of and reelecting the retiring directors. These included Mr. Busch, Sidney Thayer and William P. Morris, who were identified with the Busch group in the contest. Mr. Busch and Mr. Morris retired as president and first vice-president, respectively.

Negotiations are said to be under way in San Francisco for the merger of nine paint companies with aggregate assets of about $5,500,000. Companies have plants in San Francisco, Seattle, Los Angeles, Portland, Spokane, Tulsa, Youngstown, Milwaukee, and Indiana Harbor, Companies are California Paint Co., Hill-Hubbell Co., Jones & Dillingham, Rasmussen & Co., Seattle Paint Co., Magner Brothers Paint Co., Bradley-Wise Paint Co., Brininstool Paint Co., and Technical Oil & Paint Co. Stock financing will be handled by E. H. Rollins & Sons, San Francisco.

Dow Chemical Co., Midland, Mich., begins production of acetphenetidin. Stocks are available for prompt shipment at Midland, New York, and St. Louis. Contract quotations carry guarantee against price decline. The material is offered by the company as complying with all requirements of the U. S. P. It is packed in 100-pound kegs and 200-pound barrels. Samples will be sent on request to any of the offices of the company.

United States Court of Customs Appeals conducts hearing, October 3, on status of stearic acid, Should the court, in its decision, uphold the decision of the lower customs court, the foreign product which heretofore has been known as stearic acid cannot be entered at the stearic acid duty of 1½ cents per pound, but must come in as an acid not specially provided for, dutiable at 25 per cent. ad valorem under paragraph one, tariff act of 1922.

President Coolidge, it was stated officially, October 9, has taken no action toward a reduction in the duty on linseed oil as result of a report to him on the subject by the Tariff Commission. Mr. Coolidge, it was explained, does not feel that it would help the flaxseed industry in this country.

Chicago section, American Chemical Society, meets October 19. J. A. Wilson, A. F. Gollun & Sons Co., read a paper on "Development of Leather Chemistry" and J. C. Morrell, Universal Oil Products Co., one on "Chemistry in Petroleum Refining."

Leonard F. Eiklor, manager, chemical department, Central Scientific Co., Chicago, resigns to become manager of the fine chemical department, Pfaltz & Bauer, Inc., New York.

Ellsworth Bryce, manager of sales administration, Sunland Sales Co-operative Association, joins the sales division of the Royal Baking Powder Co., New York.

The Tariff Commission has set December 18, 1928, as the date for public hearings in the investigation of the cost of producing sodium phosphate.

The Financial Markets

Du Pont Income for Nine Months at $52,278,679 or $18.16 a Share

This Figure Compares $36,322,765 or $12.30 for Same Period During 1927 — Income of $6.84 for 1928 Third Quarter Considerably Higher Than 1927 — U. S. Industrial Alcohol Issues Right—Mathieson & Union Carbide Profits up.

Report of E. I. du Pont de Nemours & Co. for nine months ended September 30, 1928, shows consolidated net income of $52,278,679 after interest, federal taxes, etc., equivalent after deducting debenture dividends, to $18.16 a share earned on 2,661,658 shares of no-par common stock. This compares with $36,322,765 or $12.30 a share on common in first nine months of 1927.

Consolidated net income for third quarter was $19,581,897 after above charges, equal to $6.84 a share on common comparing with $11,182,584 or $3.69 a share on common in preceding quarter and $12,488,554 or $4.24 a share in third quarter of preceding year.

Profit and loss surplus as of September 30, 1928, was $128,042,620 against $97,382,496 a year ago.

Consolidated income account for quarter ended September 30, 1928, compares as follows:

	1928	*1927*	*1926*	*1925*
Oper. inc.	$6,589,643	$4,490,721	$4,044,723	$4,038,044
Inc. Gen. Mot. inv.	12,972,267	7,982,933	8,815,641	3,291,537
Other inc.	700,234	316,683	1,014,510	330,095
Total inc.	$20,262,144	$12,790,337	$13,874,874	$7,659,676
Fed. taxes	659,431	280,184	414,853	164,227
Interest	20,816	21,599	22,165	155,465
Net inc.	$19,581,897	$12,488,554	$13,437,856	$7,339,984
Deb. divs.	1,372,863	1,198,640	1,183,907	1,026,351
Com. divs.	14,638,680	9,315,384	9,980,121	3,990,840
Surplus	$3,570,354	$1,974,530	$2,273,828	$2,322,793

U. S. Industrial Alcohol Rights

Common stockholders of U. S. Industrial Alcohol Co. of record November 5 are given the right to subscribe to 80,000 shares of additional no par value common stock at $110 a share, or one share for each three shares held. Common stock will be placed on an annual dividend basis of $6 beginning with the February 1, 1929, quarterly disbursement, compared with present rate of $5.

The seven per cent. cumulative preferred stock of the company, totaling $6,000,000 outstanding, and the seven per cent. cumulative preferred stock of the Cuba Distilling Company, of which $1,158,600 is outstanding, will be called for redemption at $125 a share and accrued dividend. Through this procedure the capital structure will be simplified and the only issue of securities outstanding will be 320,000 shares of no-par common. The company has no bonds, notes or other funded obligations.

Subscriptions on the stock will be payable on or before Dec. 3. The new stock has been underwritten by a syndicate composed of Shearson, Hammill & Co., C. D. Barney & Co., and W. A. Harriman & Co., Inc. At market price of 132¾. for United States Industrial Alcohol common, rights to stockholders figure out at approximately $5.75.

Union Carbide Profit at $7,756,741

Union Carbide & Carbon Corp. and subsidiaries report for quarter ended September 30, 1928, net profit of $7,756,741 after interest, federal taxes, depreciation and preferred dividends of subsidiaries, equivalent to $2.82 a share earned on 2,742,072 shares of no-par stock. This compares with $5,868,610 or $2.20 a share on 2,659,733 shares in preceding quarter and $7,463,954 or $2.80 a share on 2,659,733 shares in third quarter of 1927.

Net profit for first nine months of 1928, totaled $19,629,483 after above charges, equal to $7.16 a share comparing with $17,672,806 or $6.64 a share in first nine months of preceding year.

Consolidated income account for quarter ended September 30, 1928, compares as follows:

	1928	*1927*	*1926*	*1925*
Net aft. fed. taxes	$10,077,866	$9,691,250	$8,862,089	$7,068,877
Int. & sub. pfd. divs.	312,310	298,365	304,135	256,702
Depr., etc.	2,008,815	1,928,931	1,959,491	1,800,381
Net prof.	$7,756,741	$7,463,954	$6,598,463	$5,011,794
Nine months ended September 30:				
	1928	*1927*	*1926*	*1925*
Net aft. fed. tax	$26,617,549	$24,339,435	$23,303,434	$18,735,948
Int. & sub. pfd. divs.	903,226	896,852	915,247	770,392
Depr., etc.	6,084,840	5,769,777	5,757,743	5,401,145
Net prof.	$19,629,483	$17,672,806	$16,630,444	$12,564,411

Mathieson 3rd Quarter Net $573,891

Mathieson Alkali Works, Inc., reports for quarter ended September 30, 1928, net income of $573,891 after depreciation, depletion, federal taxes, etc., equivalent after allowing for dividend requirements on 7% preferred stock, to $3.60 a share earned on $147,207 shares of no-par common stock. This compares with $556,666, or $3.49 a share in preceding quarter, and $479,664 or $2.96 a share in third quarter of preceding year.

Net income for first nine months of 1928, totaled $1,560,020 after above charges, equal to $9.72 a share on common, comparing with $1,378,362 or $8.48 a share in first nine months of preceding year.

Income account for quarter ended September 30, 1928, compares as follows:

	1928	*1927*	*1926*	*1925*
Total earn.	$884,213	$778,812	$706,304	$548,718
Depr, depl, etc	234,199	226,643	211,114	172,576
Fed tax prov.	76,123	72,505	65,427	33,918
Net inc.	$573,891	$479,664	$429,763	$342,224
Nine months ended September 30:				
	1928	*1927*	*1926*	*1925*
Total earn.	$2,480,125	$2,236,300	$1,989,345	$1,723,482
Depr, depl, etc	711,129	662,537	608,074	503,325
Fed tax prov.	208,976	195,401	175,352	124,529
Net inc.	$1,560,020	$1,378,362	$1,205,919	$1,095,628

Freeport Quarter Income $680,962

Freeport-Texas Co. reports for quarter ended August 31, 1928, net income of $680,962 after expenses and reserves for depreciation and taxes, equivalent to 93 cents a share earned on 729,844 shares of no-par stock. This compares with $866,271, or $1.19 a share, in preceding quarter and $1,102,726, or $1.51 a share in third quarter of 1927.

Net income for nine months ended August 31, 1928, totaled $1,952,393 after above charges, equal to $2.67 a share against $2,702,315, or $3.70 a share, in same period of preceding year.

Nine months ended August 31, 1928:

	1928	*1927*	*1926*	*1925*
Gross sales...	$8,678,479	$9,069,618	$6,376,243	$5,198,973
Costs & exp...	6,433,274	6,360,089	5,070,265	4,417,056
Gross prof..	$2,245,205	$2,709,529	$1,305,978	$781,917
Other inc.....	93,643	252,725	46,302	36,359
Tot inc.....	$2,338,848	$2,962,254	$1,352,280	$818,276
Dep & tax res.	386,455	259,939	273,202	324,082
Net prof...	$1,952,393	$2,702,313	$1,079,078	$494,194
Dividends....	3,831,681	.....	.....	.....
Deficit.....	$1,879,288	.....	.....	.....
*Surplus.				

Sherwin-Williams Profits at $4,901,840

Report of Sherwin-Williams Co. for the year ended August 31 1928, shows net profit of $4,901,840 after depreciation, interest and federal taxes, equivalent after dividends on 6% preferred stock to $6.99 a share (par $25) on 594,445 shares of common stock. This compares with net profit of $4,728,071 or $6.42 a share in preceding year. Sales for the year amounted to $62,416, 758, compared with $60,766,155 in preceding year.

Sherwin-Williams Co. declared an extra dividend of 25 cents and the regular quarterly dividend of 75 cents on the common stock, both payable November 15 to stock of record October 31. Previously the usual extra dividend on the common has been 12½ cents.

The regular quarterly dividend of $1.50 was declared on the preferred AA, payable December 1 to stock of record November 15.

United States Leather Co. reports for nine months ended September 30, 1928, net profit of $3,727,047 after depreciation, federal taxes, etc., equivalent after allowing for dividend requirements on $16,215,700 7% prior preferred stock, and for participating provisions on the Class A stock, to $4.50 a share earned on 249,743 no-par shares of Class A stock and $4.39 a share on 398,972 no-par shares of common stock. This compares with net profit of $2,119,398 or $3.79 a share on Class A and 79 cents a share on common in first nine months of 1927.

Liquid Carbonic Co., Chicago, has called for redemption, on January 2, 1929, at 105 and accrued interest, outstanding $1,000,000 first mortgage convertible sinking fund 6% bonds.

The bonds are convertible into common stock on the basis of $58 a share until December 18. The original issue of bonds, brought out in 1926, amounted to $4,000,000; they were due 1941.

International Printing Ink Corp. declares the regular quarterly dividend of 1¾ per cent. on the preferred stock and a regular quarterly dividend of 62½ cents a share on the common stock, both payable November 1 to holders of record October 15.

Rio Tinto Co., Ltd., London, declares an interim dividend of 15s on the common.

Commercial Solvents Report to Stock Exchange June 30 Lists $9,082,121 Assets

Statement of Commercial Solvents Corp. reported to New York Stock Exchange, as of June 30, 1928, shows total assets of $9,082,121, comparing with $8,885,966 on December 31, 1927, and profit and loss surplus of $3,554,437 against $3,224,084. Current assets amounted to $4,909,893 and current liabilities $1,132,535, comparing with $4,293,481 and $1,238,191 respectively at close of 1927.

Balance sheet of Commercial Solvents Corp. as of June 30, 1928, compares with December 31, 1927, as follows:

Assets	*June 30, '28*	*Dec. 31, '27*
*Land, buildings and equipment....	$3,985,557	$4,305,891
Goodwill and patents.....	1	1
Cash.....	2,319,374	1,815,244
Accounts receivable.....	935,494	876,004
Accrued interest receivable.....	4,250	7,250
Inventories.....	1,650,775	1,594,983
Other assets.....	2,121	2,293
Deferred charges.....	184,549	284,300
Total.....	$9,082,121	$8,885,966
Liabilities		
†Common stock.....	$4,370,542	$4,370,542
Accounts payable.....	154,218	219,158
Dividends payable.....	435,444	435,444
Accrued royalty, wages, int., etc.....	71,154	104,201
Federal and state tax reserves.....	471,720	479,390
Process credits.....	24,606	53,147
Surplus.....	3,554,437	3,224,084
Total.....	$9,082,121	$8,885,966

*After depreciation. †Represented by 217,722 no-par shares.

Penick & Ford, Ltd., Inc., and subsidiaries report, for quarter ended September 30, 1928, profit of $261,102, after depreciation and interest, but before federal taxes, compared with $239,636 in preceding quarter and $153,122 in third quarter of 1927. Stock outstanding consists of 33,400 shares of 7% preferred and 433,773 no-par shares of common.

Profit for first nine months of 1928 totaled $811,939, before federal taxes, against $787,875 in first nine months of preceding year.

Archer-Daniels-Midland Co. and subsidiaries report for year ended August 31, 1928, net income of $2,018,510 after depreciation, federal taxes, etc., equivalent after 7% preferred dividend requirements to $8.03 a share earned on 213,712 shares of no-par common stock. This compares with $1,604,583 or $6.51 a share on 200,000 common shares in preceding year.

Statement of Sherwin-Williams Co. and subsidiaries as of August 31, 1928, shows total assets of $45,584,029 compared with $43,307,398 on August 31, 1927, and surplus $12,524,746 against $10,465,789. Current assets totaled $26,195,004 and current liabilities $3,951,866 as compared with $24,376,512 and $3,608,464 respectively, on August 31, 1927.

Royal Baking Powder Co., New York, plans to change present $100 par value common stock into stock of no par value and to increase number of shares outstanding from 100,000 to 800,000 by exchanging eight for one, which is equivalent to a 700 per cent. stock dividend.

American Commercial Alcohol Corp. declares regular quarterly dividend of 1¾ per cent. on the preferred stock, payable November 1 to holders of record October 10.

Texas Gulf Sulfur Reports for 3rd Quarter Shows Income of $3,680,723

Texas Gulf Sulphur Co., Inc., reports for quarter ended September 30, 1928, net income of $3,680,723 after depreciation and federal taxes, but before depletion, equivalent to $1.44 a share earned on 2,540,000 shares of no-par stock. This compares with $3,586,819 or $1.41 a share in preceding quarter, and $2,936,189 or $1.15 a share in third quarter of 1927.

Net income for nine months ended September 30 totaled $10,355,381 after above charges, equal to $4.07 a share comparing with $9,053,097 or $3.56 a share in first nine months of previous year.

During third quarter company increased its reserves for depreciation and accrued federal taxes by $328,235, making total of these reserves $11,453,665 on September 30, 1928. All assets subject to depreciation in connection with operations at Gulf, Texas, are now entirely offset in these reserve accounts.

Statement for quarter ended September 30, 1928, compares as follows:

	1928	*1927*	*1926*	*1925*
*Net inc.....	$3,680,723	$2,936,189	$2,531,468	$1,478,846
Dividends....	2,540,000	2,540,000	1,905,000	1,270,000
Surplus....	$1,140,723	$396,189	$626,468	$208,846

Nine months ended September 30:

	1928	*1927*	*1926*	*1925*
*Net inc.....	$10,355,381	$9,053,097	$6,322,010	$4,174,223
Dividends....	7,620,000	7,620,000	5,080,000	3,810,000
Surplus.....	$2,735,381	$1,433,097	$1,242,010	$364,223
†P & L surp...	13,678,845	10,437,183	8,482,286	7,471,509

*After depreciation and federal taxes. †Includes reserves for depletion.

U. S. Asbestos Co. declares an initial quarterly dividend of 75 cents on the common, placing the stock on $3 annual basis, and the regular quarterly dividend of $1.75 on the 7% preferred. Both dividends are payable November 1 to stock of record October 20.

Profit for nine months ended September 30 was $549,828 before depreciation and federal taxes. Net sales for the nine months were $2,699,223, against $2,175,451 in same period of 1927. Current assets September 30 were $1,474,503 against current liabilities of $159,694.

Profit of American Zinc, Lead & Smelting Co. and subsidiaries, Boston, for quarter ended September 30, 1928, was $184,511 before depreciation and depletion, comparing with $229,083 in preceding quarter and $113,970 in third quarter of 1927.

For nine months ended September 30, profit totaled $593,833, before depreciation and depletion, against $223,165 in same period of preceding year.

Wesson Oil & Snowdrift Co., Inc., and subsidiaries report for year ended August 31, 1928, net profit of $3,137,208 after depreciation, federal taxes, etc., equivalent after deividends on $7 no-par preferred stock, to $7.07 a share earned on 300,000 no-par shares of common stock. This compares with $2,673,353 or $5.62 a share in the preceding year.

Vanadium Corp. of America declares an extra dividend of $1, payable December 15 to stock of record December 1, and the regular quarterly dividend of 75 cents, payable November 15 to stock of record November 1. At this time for the past two years an extra dividend of $1 has been declared.

Virginia Carolina Chemical Co. declares the regular quarterly dividend of $175 on the prior preference, payable December 1 to stock of record November 16.

Hercules 3rd Quarter Profit $1,030,463

Hercules Powder Co., reports for nine months ended September 30, 1928, net profit of $2,820,112 after depreciation, taxes, etc., equivalent after dividend requirements on 7% preferred stock, to $15.10 a share earned on 147,000 shares of common stock. This compares with $2,376,366 or $12.09 a share in first nine months of 1927.

Net profit for September quarter was $1,030,463 after above charges, equal to $5.66 a share on common, comparing with $992,611 or $5.39 a share on common in preceding quarter and $868,954 or $4.55 a share in third quarter of preceding year.

Consolidated income account for nine months ended September 30, 1928, compares as follows:

	1928	1927	1926	1925
Gross.....	$22,321,886	$20,928,577	$20,768,723	$17,902,708
*Net profit...	2,820,112	2,376,366	2,476,779	2,318,501
Pfd divs.....	599,765	597,946	563,949	549,490
Surplus.....	$ 2,220,347	$ 1,778,420	$ 1,912,830	$ 1,769,011

*After expenses, depreciation, taxes, etc.

Archer-Daniels Assets of $24,642,730

Consolidated statement of Archer-Daniels-Midland Co. after giving effect to acquisition of property and assets of William O. Goodrich Co., as of June 3, 1928, shows total assets of $24,642,730 compared with $15,742,130 on August 31, 1927, and earned surplus $4,729,208 against $4,014,429.

Consolidated balance sheet as of June 3, 1928, compares as follows:

	‡*June 3, '28*	*Aug. 31, '27*	*Aug. 31, '26*	*Aug. 31, '25*
Assets				
*Ld., bldgs, mach, etc...	$7,368,908	$7,128,657	$7,264,239	$7,330,816
Gdwill, etc.....	1	1	1	1
Investments.....	88,462	50,442	34,453	34,533
Inventories.....	10,925,113	5,331,259	3,969,348	2,974,449
Notes rec.....	1,081,647	25,723	41,298	40,456
Accts. rec.....	3,530,157	2,012,489	1,941,588	1,822,077
Liberty bonds.....	20,000	20,000	20,000	20,000
Cash.....	1,435,442	971,095	1,092,416	1,533,347
Due from off & emp.....	.....	72,126	32,644	21,612
Advances.....	100,000	85,047	487,000	135,845
Def. chgs.....	93,000	45,291	50,563	43,573
Total.....	$24,642,730	$15,742,130	$14,933,550	$13,956,739
Liabilities				
Pfd. stock.....	$4,300,000	$4,300,000	$4,500,000	$4,850,000
Com. stock	†5,812,436	5,000,000	5,000,000	5,000,000
Accts. pay.	2,667,678	230,777	174,549	141,920
Notes pay.....	5,022,500	.....	.....	.....
Advances.....	.....	86,252	.....	53,743
Tax, cont.res, etc	561,963	532,025	513,407	456,280
Due off & emp.	.....	29,703	35,803	15,485
Initial surp.....	1,548,945	1,548,944	1,548,944	1,548,944
Earned Surp.....	4,729,208	4,014,429	3,160,847	1,890,367
Total	$24,642,730	$15,742,130	$14,933,550	$13,956,739

*After depreciation. †Represented by 213,712 no par shares. ‡After giving effect to acquisition of property and assets of William O. Goodrich Co.

By-Products Coke Corp. reports for quarter ended September 30, 1928, profit of $327,644 after interest and depreciation but before federal taxes, comparing with $403,722 in preceding quarter and $431,759 in third quarter of 1927. Company has outstanding 189,936 no-par shares of stock.

For first nine months of 1928, profit totaled $1,098,102 before federal taxes, against $1,079,934 in first nine months of preceding year.

Net profit of Glidden Co., Cleveland, for September was $206,270 after charges and federal taxes, against $171,115 in September, 1927. Net profit for 11 months ended September 30, 1928, totaled $1,757,235, after above charges, against $1,210,878 in same period of preceding fiscal year.

National Oil Products Co., Inc., Harrison, N. J., pays an initial quarterly dividend of $1.75 per share, October 1, on the $7 dividend preferred stock, no par value, to holders of record September 20.

Air Reduction 6 Mos. Income $1,378,305

Statement of Air Reduction Co., Inc., reported to New York Stock Exchange, for six months ended June 30, 1928, shows net income of $1,378,305 after depreciation, amortization, interest and federal taxes, equivalent to $2.04 a share earned on 676,203 no-par shares of stock.

Consolidated balance sheet of Air Reduction Co., Inc., as of June 30, 1928, compares with December 31, 1927, as follows:

Assets

	June 30, '28	*Dec. 31, '27*
†Land, bldgs. eqpt., etc.	$7,879,348	$8,317,464
Cash	2,593,860	3,076,369
Accounts and notes rec.	2,160,597	1,929,404
Secured loans	2,250,000	.....
Other current assets	2,408,552	2,877,239
Inventories	1,468,069	1,376,117
Miscel invest.	3,542,636	3,533,221
Patents and licenses	1	1
Deferred charges	189,453	110,708
Total	$22,192,516	$21,220,523

Liabilities

Capital stock	*$14,373,665	$14,255,365
Accounts payable	461,541	414,048
Dividends payable	338,100	280,744
Res for taxes, ins., etc.	315,720	353,408
Res for fed tax	148,177	297,292
Ins and cont res.	999,835	691,224
Earned surplus	5,855,478	4,928,442
Total	$22,492,516	$21,220,523

*Represented by 676,203 no-par shares. †After reserves.

United States Asbestos Co. reports for six months ended July 1, 1928, net income of $273,322 after depreciation and taxes, equivalent after 7% preferred dividend requirements, to $2.53 a share earned on 100,000 no-par shares of common stock. This compares with $159,177 or $1.39 a share on common in six months ended July 1, 1927.

Sales for nine months ended September 30, 1928, totaled $2,767,000, comparing with $2,231,000 in corresponding period of the preceding year. September sales were $340,000, against $285,000 in September, 1927.

Johns-Manville Corp. and subsidiary companies report for quarter ended September 30, 1928, net profit of $1,722,451 after expenses, federal taxes, etc., equivalent after 7% preferred dividend requirements, to $2.12 a share earned on 750,000 no-par shares of common stock, comparing with $1,600,438 or $1.96 a share in preceding quarter and $772,705 or 85 cents a share in quarter ended March 31, 1928.

Net profit for first nine months of 1928 totaled $4,095,595 after above charges, equal to $4.93 a share on common.

General Electric Co. sales billed for first nine months of 1928, amounted to $242,676,762.07, compared with $225,959,610.89 for the corresponding period last year. Profit available for dividends on common stock for the first nine months of 1928 was $38,841, 625.31 compared with $35,193,054.70 for the same nine months last year. This is equivalent to $5.12 per share in 1928, and 4.61 per share in 1927 on the 7,211,481 shares.

Archer-Daniels-Midland Co. declared the regular quarterly dividends of 75 cents on the common and $1.75 on the preferred, both payable November 1 to stock of record October 20.

Pyrene Manufacturing Co. declares regular quarterly dividend of 20 cents on common, payable November 1 to stock of record October 18.

Commercial Solvents Report for 3rd Quarter Higher Than Same Quar. 1927

Commercial Solvents Corp. reports for quarter ended September 30, 1928, net profit of $898,534 after depreciation, interest and federal taxes, equivalent to $4.12 a share earned on 217,722 shares of no-par stock. This compares with $625,514 or $2.87 a share in preceding quarter and $436,481 or $2 a share in third quarter of 1927.

Net profit for first nine months of 1928 totaled $2,099,774 after above charges, equal to $9.64 a share against $1,651,503 or $7.58 a share in first nine months of previous year.

Income account for quarter ended September 30, 1928, compares as follows:

	1928	*1927*	*1926*
*Oper profit	$1,119,287	$580,482	$694,997
Other income	37,664	20,121	25,918
Total income	$1,156,951	$600,603	$720,915
Other deduct	99,113	57,407	163,756
Fed tax, etc.	159,304	106,715	80,828
Net profit	$898,534	$436,481	$476,331

Nine months ended September 30:

	1928	*1927*	*1926*
*Oper profit	$2,627,996	$2,183,780	$1,768,242
Other income	80,895	54,783	85,309
Total income	$2,708,891	$2,238,563	$1,853,551
Other deduct	219,951	181,594	439,227
Fed taxes, etc.	389,166	405,466	249,681
Net profit	$2,099,774	$1,651,503	$1,164,643

*After depreciation.

Columbia Carbon Co. is offering holders of voting trust certificates for its capital stock, of record October 18, the right to subscribe at $70 to one share of additional stock for each ten shares held. Rights expire November 22.

Purpose of the issue is to provide funds for expansion of the business of the company and its subsidiaries in the production, transportation and marketing of natural gas and its products.

Company has 500,000 authorized no-par shares, of which 402,131 shares are outstanding, so rights involve 40,213 additional shares.

Certain-Teed Products Corp. and subsidiaries report for quarter ended September 30, 1928, net income of $13,906 after depreciation, depletion, interest, federal taxes, etc., equivalent to 22 cents a share earned on $6,290,390 7% preferred stock. For first nine months of 1928 net income totaled $54,473 after above charges, equal to 86 cents a share on preferred. Comparisons are not available.

Diamond Match Co. reports for nine months ended September 30, 1928, net profit of $1,201,042 after depreciation, federal taxes, etc., equivalent to $7.23 a share earned on 166,000 shares of capital stock. This compares with $1,177,054 or $7.06 a share on 166,500 shares in first nine months of 1927.

Vanadium Corp. of America declares regular quarterly dividend of 75 cents per share, payable November 15 to holders of record November 1, and an extra dividend of $1 per share for the year 1928, payable on December 15 to holders of record December 1.

The Celluloid Corp. declares the regular quarterly dividends of $1.75 on the first preferred participating and $7 preferred, both payable December 1 to stock of record November 10.

Jones & Laughlin Extra Dividend

Jones & Laughlin Steel Corp., Pittsburgh, declares an extra dividend of $1 on the common and the regular quarterly dividends of $1.25 on the common and $1.75 on the preferred. Both common dividends are payable December 1 to stock of record November 13, and the preferred dividend January 1 to stock of record December 13.

Jones & Laughlin Steel Co. and subsidiaries report for nine months ended September 30, 1928, net income of $11,649,453 after depreciation, depletion, interest and federal taxes, equivalent after dividends on 7% preferred stock, to $14.95 a share earned on 573,320 shares of common stock. This compares with $9,841,816 or $11.83 a share in first nine months of 1927.

A company known as the Chilean Nitrate of Soda Distributors (Ltd.), was registered on August 31, 1928, as a private limited company, with a capital of £10,000 in £1 shares, apparently for the purpose of distributing nitrate of soda in Great Britain for the account of Chilean nitrate producers adhering to the recently formed nitrate sales organization. The formation of this British distributing company would appear to be a further step in the consolidation and centralization of the nitrate of soda industry for the purpose of enabling the industry to compete to better advantage with synthetic nitrogenous fertilizers. The directors of the new British company are well known in nitrate circles, and include Mr. T. T. Aikman of Aikman London (Ltd.), and Mr. F. Petrinovic of the Lautaro Nitrate Co., reports Trade Commissioner Homer S. Fox, London.

Atlas Powder Co. declared regular quarterly dividend of 1½% on preferred, payable November 1 to stock of record October 9.

Aibel Rayon Co., New York, increases capital from $50,000 to $150,000.

Anglo-Chilean Shows Deficit of $902,278; Improved Over Last Year

Anglo-Chilean Consolidated Nitrate Corp. reports for six months ended June 30, 1928, deficit of $902,278 after interest, taxes, amortization, depreciation and depletion, comparing with deficit of $1,368,364 in first six months of 1927.

Income account for six months ended June 30, 1928, compares as follows:

	1928	*1927*
Operating income	$1,940,419	$311,693
Other income	33,698	19,258
Total income	$1,974,117	$330,951
Interest	1,627,259	1,330,273
Taxes and amortization	103,713	69,520
Depreciation and depletion	1,145,423	299,522
Deficit	$902,278	$1,368,364

The outstanding common stock of American Zinc, Lead & Smelting Co., Boston, has been increased to 200,000 shares, by issuance of 6,880 shares formerly authorized but held in the treasury. The new shares have been listed on the New York Stock Exchange.

National Lead Co. declared the regular quarterly dividend of $1.75 on the class A preferred stock, payable December 15, to stock of record November 30.

American Smelting & Refining Co. purchases the class B stock of the Michigan Copper & Brass Co., thereby acquiring the latter company.

The Industry's Bonds

1928 Oct. 31st High	1928 Oct. 31st Low	1928 High	1928 Low	1927 High	1927 Low	Sales To Oct. 26	Sales Since Jan. 1928	ISSUE	Date Due	Int. %	Int. Period	Orig. (1) Offering $
								NEW YORK STOCK EXCHANGE				
105	104⅛	106⅛	104	105	99	69	2,009	Am. Agri Chem	1941	7⅛	F. A.	30,000
101	101	102¼	100	103⅛	100¼	348	2,953	Am. Smelt & Refin "A" 5%	1947	5	A. O.	...
...	...	...	...	108¼	107⅛		774	Am. Smelt & Refin "B" 6%	1947	6	A. O.	...
105⅛	105¼	106⅛	103	105¼	103⅛	796		Anaconda Copper Mng	1953	6	F. A.	100,000
145⅛	142¼	150⅛	110¼	116⅛	106¼	3,843		Anaconda Copper Mng 7%	1938	7	F. A.	50,000
96⅛	96¼	105¼	92	97	87	741	4,675	Anglo Chilean	1945	7	M. N.	16,500
101⅛	101⅛	103¼	97⅛	103⅛	100⅛	75	864	Atlantic Refin	1937	5	J. J.	15,000
...	...	103⅛	100	102¼	100¼	3	246	By product Coke	1945	5½	M. N.	8,000
...	...	102⅛	100	104¼	101¼	17	139	Corn Product Refin	1934	5	M. N.	10,000
107⅛	107⅛	117	106	111⅛	106	48	1,424	General Asphalt	1939	6	A. O.	5,000
...	...	100	90	91¼	81⅛	3	162	Int. Agric. Corp	1932	5	M. N.	30,000
...	...	86	77	...	...	8	302	Int. Agri. Corp. stamped. extended	1942	5	M. N.	7,020
133	133	142	113	133⅛	104	140	3,411	Liq. Carbonic Corp	1941	6	F. A.	5,000
118	116⅛	120	100⅛	102	98⅛	967	5,356	Montecatini	1937	7		
93⅛	93⅛	101⅛	93⅛	95⅛	92⅛	444	1,443	Ex War	1937	7		
105⅛	105⅛	120	113¼	115	113⅛	1	66	People's Gas & Coke	1943	6	A. O.	10,000
...	...	108⅛	102	105⅛	101¼	64	1,056	Refunding	1947	5	M. S.	40,000
103⅛	103	104	102⅛	104⅛	101⅛	346	5,712	Standard Oil N. J.	1946	5	F. A.	120,000
111⅛	111⅛	117	101⅛	101⅛	98⅛	236	894	Tenn. Cop. and Chem	1941	6	A. O.	3,000
...	...	91⅞	82	95⅛	91	6	87	Va. Iron C. & C				
								NEW YORK CURB				
...	...	...	...	99⅛	95⅛		196	Agri. Mtge. Bk. of Col 46	1946	7	J.O.	...
...	...	...	...	99⅛	96		353	Agri. Mtge. Bk. of Col	1947	7	J.J. 15	3,000
101⅛	101⅛	103⅛	100	105⅛	105	213	4,171	Alum. Co. of Am 52	1952	5		
...	...	...	...	101⅛	99		609	American Cyan	1942	5	A. O.	5,000
100⅛	100⅛	101⅛	99⅛	102⅛	101⅛	83	1,083	Anaconda Cop	1929	6	J. J.	25,000
99	99	101⅛	97⅛	99⅛	95⅛	535	3,198	Koppers Gas and Coke	1947	5	J. D.	25,000
100⅛	100⅛	103⅛	98	103	98	13	162	Natl. Dist. Prod	1935	6⅛	J. D. 15	3,500
95⅛	95⅛	98⅛	93⅛	98	95⅛	225	3,975	Shawinigan W & P	1967	4⅛		
...	...	...	...	100⅛	100	7	48	Silica Gel	1952	6⅛		
...	...	...	...	99⅛	96	56	1,001	Solvay Am. Invest. Corp	1942	5	M. S.	15,000
100⅛	100⅛	103	97⅛	100⅛	99	217	2,559	Swift & Co	1932	5	A. O.	50,000
...	...	...	...	99	90		202	U. S. Ind. Alc	1941	6⅛	M. N.	...
102⅛	102⅛	104	99⅛	103⅛	98⅛	18	384	Westvaco Chlorine Prod	1937	5⅛	M. S.	2,500
								BOSTON				
102	101⅛	103	101	102⅛	101	33	341	Swift and Co	1944	5	J. J.	50,000
								CHICAGO				
...	...	103	101⅛	103⅛	101⅛	13	128	Swift and Co	1944	5	J. J.	50,000
...	...	...	...	101⅛	99			Westvaco Chlorine Prod	1937	5⅛	M. S.	2,000

Industrial Rayon Profit $1,159,250

Industrial Rayon Corp. reports for nine months ended September 30, 1928, net profit of $1,159,250 after charges, depreciation and taxes, equal to $6.09 a share earned on 190,431 no-par shares of capital stock, comparing with $571,095 or $2.99 a share figured on above share basis for first nine months of 1927. September net profit was $198,912 against $105,000 in September of preceding year.

Current assets on September 30, last, amounted to $8,043,301, including $6,781,301 in cash and call loans. This compares with current liabilities of $274,115.

A company known as the Kunstsdunger Patentverwertungs Aktiengesellschaft has been formed in Glarus, Switzerland, with a capital of 100,000 francs for the exploitation of the Lilienroth patents covering the production of fertilizer materials. The inventor is to receive 12½ per cent. of the profits, says the Department of Commerce.

Canadian Industries, Ltd., Montreal, has made offer of $250 a share for the common stock of Canadian Salt Co., Ltd. Special meeting of stockholders of the latter company has been called for November 15 to consider the offer, which is recommended for acceptance by Sir Thomas Tait, president of Canadian Salt Co.

Amer. Smelting Recommends Split-Up

Directors of the American Smelting & Refining Co., recommend a three-for-one split-up in common stock.

Directors announced also an increase in authorized common stock to 4,000,000 no par shares and prepared a plan to create 200,000 shares of $100 par second preferred.

A special meeting of stockholders December 18 will act on the increase of authorized common stock from 650,000 shares of $100 par to 4,000,000 shares of no par and ratify proposed split-up.

Stockholders will vote also on proposal to create a new issue called second preferred stock, consisting of 200,000 shares of $100 par, subordinate to the present preferred stock, but otherwise having the same purpose as the present preferred with reference to the common, except that second preferred shall be entitled to cumulative dividends of six per cent. a year.

Royal Baking Powder Co. files brief with U. S. Tariff Commission claiming that the present rate of six cents per pound does not equalize the differences in cost between Italy and the United States in the production of tartaric acid, and urging that the commission recommend that the duty be increased to the limit allowed by section 315, Tariff Act of 1922.

The Industry's Stocks

1928 Oct. 31st Bid	1928 Oct. 31st Asked	1928 High	1928 Low	1927 High	1927 Low	Sales To Oct 26	Sales Since Jan. 1, '28	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	Earnings $-per share-$ 1926
								NEW YORK STOCK EXCHANGE					
79	80	86⅜	59	199¼	134½	89,800	535,300	Air Reduction	No	223,445	$5.00	9 mo. 12.63	10.83
224½	225	240½	146	169½	131	241,700	1,914,800	Allied Chem. & Dye	No	2,178,109	6.00	10.02	9.79
122½	122½	...	...	124	120	2,700	23,670	7% pfd	100	392,849	6.00		61.28
18	18½	23½	15⅜	21½	8½	19,000	326,720	Am. Agricultural Chem	100	333,221	2.00	Nil	...
66½	67	76½	55⅜	72½	28½	25,200	359,920	pfd	100	284,552	1.50		3.59
105⅛	105½	113⅜	70½	77⅜	43⅜	1,170,000	9,741,370	American Can	25	2,473,918	2.00	4.11	4.38
141	141½	...	...	141½	126	2,600	39,360	pfd	100	412,333	7.00	31.66	33.31
127	129	135	56⅜	72½	20½	41,500	2,086,820	American Linseed	100	167,500	...		...
140	155	...	...	92½	46⅜	2,600	77,060	pfd	100	167,500	7.00	7 mo. 6.00	.62
50	50½	53⅜	39	49⅜	36½	44,500	391,720	American Metal Ltd	No	594,278	4.00	9 mo. 3.64	3.88
112	113	...	...	113½	108	300	25,096	pfd	100	50,000	7.00	9 mo. 50.27	53.15
267	267½	275½	169	188⅜	132⅜	286,700	2,562,680	Amer. Smelt and Refin	100	609,980	7.50	6 mo. 19.64	23.38
137	138	142	131	133	119½	4,100	42,200	pfd	100	500,000	7.00	6 mo. 17.01	35.52
44	44⅛	57	6⅜	10½	5¼	265,800	1,660,900	Amer. Zinc & Lead	25	193,120	...	9 mo. Nil	...
101	102½	117⅛	40	51½	35	21,700	601,600	pfd	25	96,560	...	9 mo. 2 31	...
88⅞	89	89¼	53¾	60½	41½	1,055,300	7,417,120	Anaconda Copper Mining	50	3,000,000	3.00		4.74
93	94	98½	55½	63	38	91,000	386,580	Archer Dan. Mid	No	200,000	...	5.76	6.35
113½	115½	112	290	112⅜	106	290	3,230	pfd	100	43,000	7.00	37.31	35.23
80	87	101	63	70	56½	3,100	40,900	Atlas Powder Co	No	260,393	4.00	5.75	7.04
102½	105	110½	102	107	98	310	4,148	pfd	100	90,000	6.00	6 mo. 22.71	26.46
220	222	238½	95⅜	131⅜	104	325,100	2,326,580	Atlantic Refining	100	500,000	...	9 mo. Nil	11.24
9	9½	11⅜	4½	5½	3⅜	188,400	602,420	Butte Copper & Zinc	5	600,000	.50	9 mo. 0.09	.32
11½	12	16⅜	8⅜	11⅜	7⅜	69,200	401,660	Butte Superior Mng	10	290,197	2.00	9 mo. 0.23	1.71
87	88½	94	65	92½	66	22,500	84,720	By Prod. Coke	No	189,931	3.00	9 mo. 4.84	6 00
3½	3⅞	5⅜	1⅞	2⅜	1¼	31,700	614,960	Calla Lead & Zinc	10	723,355	...	9 mo. 0.08	...
42½	43¼	46½	20½	24¾	14½	655,800	1,919,120	Calumet & Hecla	25	2,005,502	1.50	9 mo. 0.29	.75
31½	32	63½	60½	55½	42	145,200	986,200	Certainteed Prod	No	307,000	4.00	9 mo. 6.07	6.02
80	90	...	..	118½	106	200		1st pfd	100	43,000	7.00	9 mo. 56.80	54.30
...	...	60¾	37⅜	44⅜	33½	477,100	1,875,830	Chile Copper	25	4,435,595	2.50	6 mo. 0.62	2.65
91	92½	104½	79	101½	66⅜	31,300	2,025,40	Columb Carbon	No	204,131	4.00	9.41	6.51
212	214	225¼	137⅞	203	145	63,000	562,600	Commercial Solvents	No	108,861	4.00	9 mo. 9.24	14.13
116½	117	128⅛	80¼	86⅞	58⅜	111,700	2,025,060	Cont. Can	No	620,000	6.00	7 mo. 7.54	6.36
125	127	...	...	126	120	90	2,480	pfd	100	52,930	7.00	7 mo. 86.82	70.55
83	83½	89⅜	64¾	68	46⅜	78,400	1,831,700	Corn Products	25	2,530,000	2.00	9 mo. 4.01	4.03
...	...	146¼	138⅛	142½	128	1,120	14,220	pfd	100	250,000	7.00	9 mo. 47.62	47.73
58½	59	66¼	34⅜	48½	26½	158,500	1,637,660	Davison Chem	No	310,000	...		...
51½	52½	61	40	42⅞	36½	12,600	337,400	Devoe & Rayn A	No	95,000	2.40	(†) 5.47	5.22
112½	114½	...	...	114½	101	20	2,630	1st pfd	100	18,096	7.00	6 mo. 53.23	49.70
118	118⅜	121½	114	118	105½	3,800	47,990	Dupont deb	100	795,212	6.00	9 mo. 57.04	52.51
421	430	442	310	343⅞	168	49,400	504,160	Dupont de Nemours	No	2,661,658	9.50	15.45	13.98
180	181	194½	163	175½	126½	34,100	320,740	Eastman Kodak	No	2,055,340	5.00		9.50
125⅜	126	132¼	123½	131½	119½	450	1,692	pfd	100	61,657	6.00		322.11
155	162	...	...	97	75½	2,200	8,400	Fed. Mining & Smelting	100	50,400	...	23.36	35.95
80	80½	89⅜	65	71⅜	46⅛	507,300	3,243,620	Fleischmann	No	4,500,000	3.00	4.30	4.08
45⅜	46	109½	43	106½	34	229,700	3,326,120	Freeport Texas	No	729,733	4.00	9 mo. 5.24	2.48
71	72	94⅛	68	96½	65	83,900	1,778,500	General Asphalt	100	243,550	...	6 mo. 5.00	8.11
112½	118	...	...	144¼	107½	1,800	51,030	pfd	100	68,742	5.00	6 mo. 4.20	27.58
102½	103	110⅞	71	78¾	42	451,600	3,290,120	Gold Dust	No	318,586	...	6.20	3 07
75½	77	84	64½	70⅜	43½	83,500	307,110	Household Prod	No	575,000	3.50	6 mo. 5.22	5.22
13¼	13½	20⅞	13	16⅜	6⅜	14,100	286,500	Intern. Agri	No	441,695	...	Nil	1.60
77	78¾	83½	48⅜	65	33	2,200	91,300	pfd	100	100,000	...	Nil	14.06
190	190½	191	73¾	89½	38½	1,584,000	12,644,100	Intern. Nickel	25	1,673,374	2.00	9 mo. 2.26	3.00
120	122	...	...	110	103¾	500		pfd	100	89,126	6.00	9 mo. 46.94	62.35
55	57½	69	49½	75	63	1,010	11,578	Intern. Salt	100	60,771	6.00	6 mo. 2.64	8.35
168	169	177½	96½			415,700	2,133,860	Johns-Mansville	No	750,000		4.69	4.34
119½	120	84½	63½	78¾	45	35,600	658,200	Liquid Carbonic Corp	No	125,000	3.60	5.90	11.34
48	48½	...	...	58½	43	4,900	45,040	Mac and Forbes	No	376,748	2.00	9 mo. 2.36	3.30
156	156¼	167½	117½	132⅜	82	72,200	406,760	Mathieson Alk	No	147,207	6.00	9 mo. 11.27	9.88
121	124	130	115	120	103	180	2,205	pfd	100	24,750	7.00	9 mo. 74.06	67.85
25¾	26	26⅛	17⅛	20¾	13	100,700	508,700	Miami Copper	5	747,114	1.50		1.52

1928 Oct 31st Bid	1928 Oct 31st Asked	1928 High	1928 Low	1927 High	1927 Low	Sales To Oct. 26	Sales Since Jan. 1, '28	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	Earnings $-per share-$ 1926
37	39	58¼	29½	56¼	17	36,800	594,340	National Dist. Prod	No	167,651	...	9 mo. 0.54	...
62½	65	...	...	69¼	43	3,200	37,860	pfd	No	109,795	...	9 mo. 1.62	...
116	117	136	115	202¼	95	5,400	74,180	National Lead	100	206,554	8.00	10.25	35.33
142	143	147½	139	139¾	131½	210	11,030	pfd A	100	243,676	7.00		
118	120½	122	112½	116¼	104¾	80	8,060	pfd B	100	103,277	6.00		
36¼	37	41½	22¼	27¼	19½	122,200	611,900	Penick & Ford	No	433,773	...	9 mo. 2.04	1.37
183	186½	201½	157	168¼	126	11,300	219,280	Peoples Gas Chi	100	60,000	8.00	11.15	11.04
44½	45	49¼	37	43¼	36	45,700	440,700	St. Joseph Lead	10	1,951,517	2.50	1.85	4.21
46¼	47	49	37½	41½	35½	307,000	4,178,320	Standard Oil Co of N. J	25	24,262,532	1.00		5.01
35¼	35½	41½	28½	34½	29½	296,200	4,947,180	Standard Oil Co. of N. Y	25	17,023,928	1.60	0.90	1.9 4
16½	16½	17½	10½	13½	8½	113,100	723,700	Tenn. Cop. & Chem	No	794,624	1.00		1.31
69¼	69¾	80¼	62½	81¼	49	344,900	4,540,840	Texas Gulf Sulfur	No	2,540,000	4.00	4.76	3.69
189	190	202	136¼	154½	98½	457,300	2,698,900	Union Carbide	No	2,827,470	6.00	9 mo. 6.64	9.07
10	12½	...	...	10	3½			United Dyewood	100	139,183	7.00	9 mo. Nil	...
65	70	74½	45½	49	36¼	80	2,830	pfd	100	39,500	...	6 mo. 2.72	3.88
130	131	138	102½	111¼	69	189,600	1,213,180	U. S. Ind. Alc	100	240,000	5.00	6.00	7.04
124¼	125	124½	118¼	121	107½	750	4,270	pfd	100	60,000	7.00		35.16
13	13½	16½	12	48½	26½	13,000	192,590	Va. Car. Chem Com. 6% pfd	100	213,350	...		6.73
51½	52	55½	44¼	91	73	1,000	32,090	7% pfd	100	142,910	7.00		17.54
High	**Low**							**NEW YORK CURB**					
...	...	...	...	31½	30	2,700	66,670	Acetol Prod	No	60,000			
138	138	197½	120	145½	67½	4,100	118,370	Aluminum Co. of America	No	1,427,625	...	4.02	...
...	...	...	...	43½	25			"B"	20	263,772	1.20	3.09	3.49
17½	16½	24	13	18½	3½	17,900	280,640	Amer. Rayon Prod	No	110,000	1.00		Nil
35½	34½	41¾	25½	29	11	8,500	164,740	Amer. Solvents & Chem. pfd	No	160,000	...		Nil
32	31½	54	26¼	31½	14	21,100	188,000	Anglo Chile Nitrate	No	1,756,750	...	Loss	Loss
...	...	...	...	43½	22	100		Canad. Ind. Alc	No	800,000	1.28	2.49	2.63
160	160	226	156	...	...	390		Casein Co					
61½	59½	103	53½	117	44	18,700	227,240	Celanese Corp of Am	No	1,000,000	...	1.91	1.80
...	...	...	...	129¾	60	3,100	23,900	Celluloid Co	100	70,980	...		...
...	...	...	...	133¾	113¾	300	6,190	1st pfd	100	24,551	...		...
70½	69	...	...	91	84	350	7,120	Celotex pfd	No	164,730	3.00		5.06
...	...	...	...	126	76½			Chesebro Mfg Co	25	120,000	4.00		8.06
...	...	...	...	38½	24¼	5,700	60,120	Courtaulds	£1	£12,000,000	16½%		18.18
291	291	300	192	202	180	110	1,178	Hercules Powder	100	147,000	16.37	9 mo. 16.37	18.18
122½	122½	124	118½	121	114	220	1,260	pfd	100	111,392	7.00	28.04	30.82
...	...	...	...	10	7¼	3,100	18,880	Heyden Chem	10	150,000	...		0.32
...	...	...	...	24¼	4¼	13,700	786,680	Indus. Rayon "A"	No	452,544	...		2.27
228	228	260	180½	39	37¼	2,600	13,160	Monsanto Chem	No	110,000	2.50	6.11	5.60
...	...	...	...	194¼	178			N. J. Zinc	100	490,816	8.00	14.34	14.34
...	...	...	...	112	60½		91,540	Palmolive Peet	No	1,500,000	...	5.04	2.86
...	...	...	...	105½	84	625	21,680	Penn Salt	50	150,000	5.00	8.09	6.08
7	7	9¼	6¼	14¼	8	14,680	15,580	Pyrene Mfg	10	223,158	2%	6.42	2.38
405	388	424	205	335	160	11,235	17,985	Royal Baking Powder					
105½	105½	111½	103	110	100	750	2,050	pfd					
91¼	91	92	65½	68¼	44	400	2,375	Sherwin Williams	25	594,445	3.00	6.42	5.59
21½	21½	29	17	20½	13½	5,850	120,370	Silica Gel	No	600,000	...		...
80½	79½	83½	70½	81¼	64¼			Standard Oil Co. of Indiana	25	9,136,618	...		6.03
...	...	...	...	12	5	1,800	12,200	Snia Viscosa	150 lire	6,666,666⅔	.72		6.86
...	...	...	...	21	13¾			Swan & Finch	25	34,458	.87½		...
131½	131	137	125	130	115½	7,050	55,030	Swift & Co	100	1,500,000	8.00	8.13	10.43
584	571	630	450	499	145	5,350	87,798	Tubize "B"	No	78,868	...		...
...	...	...	...	110½	82½	4,150	46,075	U. S. Gypsum	20	687,875	8%	10.10	11.35
91½	91	96¼	67	77	50½	36,100	161,500	Wesson Oil and Snow	No	300,000	4.00	5.26	8.71
								CLEVELAND					
140	140	147½	104	115	74½	418		Cleve-Cliff Iron	No	400,000	4.00		
185	185	190	112½	108	70	300		Dow Chem	No	120,000	6.00		...
...	...	...	...	106½	100			pfd	100	30,000	7.00		...
...	...	...	...	21¼	15½			Glidden	No	400,000	2.00	3.03	3.41
...	...	104½	96	100	84	1,068		pfd	100	71,922	7.00	6 mo. 23.91	25.98
...	...	85¼	47	135	127	910		Grasselli	100	215,704	...	11.27	10.24
...	...	111	105½	109½	102½	1,313		pfd	100	123,742	6.00		23.68
...	...	...	...	24¼	4¼			Indus. Rayon "A"	No	452,544	...		2.27
91	91	95	65½	70	44	3,454		Sherwin Williams	25	594,445	3.00	6.42	5.59
107	107	109½	106	109	104	545		pfd	100	125,000	6.00		...
...	...	27¼	24¼	...	...	1,070		Wood Chemical Prod. "A"	No	20,000	2.00		...
								PITTSBURGH					
...	...	25	16½	33¼	18	240	2,376	Am. Vitrified Prod	50	70,000	7.50	2.95	2.19
								CHICAGO					
71	70½	73	49	86	53	11,180		Celotex	No	170,456	3.00	3.31	
...	...	92	80	92	82	330		pfd	100	52,534	7.00		
92	92	95	38½	39	37	5,215		Monsanto Chem	No	110,000	2.50	6.11	
132	131½	136	124	130	115½	5,897		Swift & Co	100	1,500,000	8.00	8.13	10.43
...	...	...	...	152½	99			Union Carbide	No	2,827,470	6.00	9 mo. 6.64	9.07
...	...	100	55	110½	82	15,340		U. S. Gypsum	20	687,875	8%	10.10	11.35
								CINCINNATI					
...	...	...	...	125½	113½	44	332	Fleishmann pfd	100	12,295	6.00	1,589.49	1,501.80
287	285	...	...	250	177	2,483	22,667	Proc. & Gam	20	1,250,000	4.75		9.17
								BOSTON					
43½	43	46	20½	17½	14½	20,919	127,966	Calumet & Hecla	25	2,005,502	1.50	9 mo. 0.29	.75
132	131	135½	124½	130½	115	1,299	13,556	Swift & Co	100	1,500,000	8.00	8.13	10.43
								ST. LOUIS					
...	...	...	...	...	...		337	Certainteed Prod. pfd	100			56.80	
...	...	...	...	36	36	284	2,115	South Acid and Sulfur Co	No	52,000	3.00		...
								PHILADELPHIA					
...	...	109½	92	105½	74½	6,915	17,690	Penn. Salt	50	150,000	5.00	8.09	6.08
143½	140½	149¼	114½	118½	89½	173,800	1,298,803	United Gas Imp	50	2,130,088	...		4.59
								MONTREAL					
...	...	...	...	39½	20	...	....	Asbestos Corp	No	200,000	1.50		1.02
...	...	...	...	98	82½	...	....	pfd	100	74,561	7.00		
...	...	...	...	43½	21¼	...	....	Canada. Ind. Alc	No	(d)800,000	1.28	2.49	2.63
83	83	...	...	*277½	67	...	....	Shawinigan W. & P	No	1,100,000	2.00	2.63	
...	...	...	...	207	142	...	....	Sherwin William of Can	100	40,000	6.00	8.84	9.54
...	...	...	...	127	117	...	....	pfd	100	34,350	7.00		
								BALTIMORE					
...	...	...	...	39¼	37	...		Davison Chem	No	310,000	...		...
...	...	28½	17	20½	15	110	28,988	Silica Gel	No	600,000	...		...
								UNLISTED					
...	...	...	...	...	...	...	....	Casein Co	100	21,196	7.00		7.10
...	...	...	...	...	...	...	....	Merck & Co pfd	100	33.950	4.00		7.60
...	...	...	...	...	...	...	....	Merrimac	50	70,560	...		...
...	...	...	...	...	...	...	....	Newport Chem	1	912,198	4%		

*Old stock. † Combined A & B. (b) June 18 to Dec. 30. (d) 1927 earnings on 969,480. (e) Bid & Asked. (f) Thru Jan. 28 (g) High low.

The Trend of Prices

Sale of Heavy Chemicals Continues Brisk Throughout Month of October

Some Makers Call it Sellers Market for First Time Since Early Post War Days—Chlorine Schedule Price Lower —Caustic Soda Firm and Scarce—Acetate of Lime Advanced—Mercury Lower.

Activity in the industrial chemical market has been such during the past month or six weeks, that several manufacturers now characterize it as a seller's market for the first time since the days immediately following the conclusion of the War.

There is no denying that business throughout the year now drawing to a close has been of extremely increased volume over previous years. There are isolated exceptions to this condition, but these are so heavily counterbalanced by the general trend of the market that they can hardly be considered as factors.

Of primary interest to the trade during the month has been the announcement of the consolidation of the Du Pont and Grasselli interests to form an even more powerful group than was presented by these companies functioning as separate organizations. While no details of the operation have been announced, and probably will not be until about the first of the year, it is expected that the Grasselli Company will take over the entire sale of heavy chemicals with Du Pont handling all other items made by the two companies. Another announcement of importance during the period under report was that of the 1929 alkali prices. In this group is included liquid chlorine, one of the few articles which is considered as not up to the general market in strength. This is not surprising in view of the fact that the present producers are capable of making more than the requirements of the consuming trades with the latter taking stocks up to the full extent of their contracts. Add to this the fact that an other manufacturer will enter the field as of January 1 here in the East and with the construction of two new plants being rushed to completion on the Pacific Coast, the position from the manufacturers point of view is none too bright. These western plants have little or no effect on Eastern business and another caustic soda manufacturer who was also reported to be considering the manufacture of chlorine has definitely spiked the rumor. These latter facts are, however, small consolation to the other competitors.

Scarcity of Caustic Soda

In contrast to this position, caustic soda continues to be outstandingly firm in all quarters. Buyers are taking commitments on contracts to the extent that it has been embarrassing to producers in several instances. This firmness of the market going into the contract season has had the effect of forcing the buyers into contracting at an earlier date this season, without the usual dickering for concessions, discounts and other hazards to the even tenor of a salesman's existence. Soda ash is also moving very well and no change in the position is looked for—particularly with the rate at which business for 1929 is being consummated.

Acetate of lime, acetic acid, methly acetone and alcohol are a few of the others which have been showing strength during the month. The acetate of lime position has become acute in all directions because of a shortage of raw material supplies. This has added strength to the entire group. Plants are now running to full production which will help in allievating the shortage, but the consuming demand is so insistent at this writing that no change is expected in the position much before the first of the year. Acetic acid manufacturers report a heavy call for stocks, which they are hardly able to care for under existing conditions.

The expected movement of alcohol into anti-freeze consuming channels has now become a reality and the market has strengthened to the extent that the price has been advanced one cent gallon. Confirmation of a report that another large merger in the alcohol field was imminent has come to light within the past two weeks, and though there is some disagreement in the trade as to which companies will be included it seems definitely established that after the names are announced, there will be but two or three distillers who will not be included in the group of so-called larger companies. These consolidations during the past two years—of which there have been three—have had a very desirable effect in aiding strength to the basic position of the market, as it narrows the competition down to about six to eight, where formerly competition for an order was not so restricted, and as a result, more subject to the evil of price cutting. The only fly in the ointment of the alcohol market at the moment is the endeavor of a group in New York to obtain a foothold in the market by offering stocks, which have been held since prior to the advance, at a level somewhat more attractive to consumers than the openly quoted prices of the regular producers. These latter claim that this is not having any great effect on the position of the market, but admit that it is disturbing. The Alcohol Institute is again making strenuous efforts to capture a lion's share of the anti-freeze business from the glycerin and ethylene glycol group by an extensive advertising campaign in daily papers and a national weekly. These advertisements will make their appearance about the middle of November.

Methyl Acetone Strong

Methyl acetone has shown continued strength during the month. The price has advanced 8c gal. over the month and the good consuming demand is keeping the market well up to the advanced level. Chlorate of soda continues in good demand from the agricultural districts, The absence of any noticeable imported competition on chlorate of soda has prompted domestic manufacturers to advance the price to the levels which prevailed before the importers forced the decline. Oxalic acid is moving along at a good rate. Competition among makers for business is not so noticeable at this writing and the price has firmed a bit. Chlorate of potash is also in a better position and the price has been advanced on this market as cheap sellers have been eliminated from the market for the time being at least.

On the other side of the picture, mercury and ammonium chloride come to mind as the only outstanding articles which do not show strength. There seems to be competition between the mercury selling organization and the foreign operators for what business there is, with the result that the latter group have been offering stocks at a price which has scaled downward since our last report. As a result of the downward tendency of the market, buyers in this country have been a bit reticent in buying quantities and the market is not very brisk at the moment. Imported competition is again noticeable in ammonium chloride and while it has not cut into domestic sales to an appreciable degree, the latter will probably take steps to protect their market, which may result in a slight decline before the end of 1928.

The export demand for copper sulfate is now being felt. The price has not changed as producers have had an opportunity to build up stock in the off months, but with raw material copper higher to the extent of making a noticeable difference in the cost of the sulfate, an advance would not be surprising.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Acetone — There has not been any change in the position of this item during the month just past. Interest has been evident in many quarters at the prospective movement of the market and consuming demand has been fully up to expectations for the period.

Acid Acetic — Since last reported the price has advanced 25c per 100 pounds, based on a continued brisk demand from consuming centers and the apparent shortage of raw material stocks. Consumers content that they are having considerable difficulty in coping with the healthy inquiry at the end of the month. Prices are at $3.88 100 lbs. for 28% acid in barrels and $13.68 100 lbs. for glacial in barrels.

Acid Citric — Has not shown any change over the month. Movement has been about as expected for the season of the year and the price is fairly well maintained at the market levels.

Acid Cresylic — On a fairly good demand prices have been maintained at previous levels over the month. Dark acid is named at 70c @ 72c gal. and pale at 72c @ 78c gal. according to seller and quantity.

Acid Formic — Continued curtailed buying by the textile industry has not helped the sale of this item. The price of both imported and domestic is unchanged but the movement into consuming channels is not very brisk.

Acid Muriatic — Business has been quite good during October and makers are holding firm to the scheduled levels of $1.40 100 lbs. for 18° acid and $1.70 per 100 lbs. for 20° acid. Good consuming demand is responsible for the firm conditions of the market.

Acid Oxalic — The market has resumed the firm aspect which characterized it prior to the concession in price which were being made throughout the Summer months caused by competition among various makers. Leading sellers now quote the inside price at 11c lb. with the possibility of shading fractionally on a good sized order. Stocks are rather limited on all markets and the outlook is for a continued firm position.

Acid Sulfuric — There seems to be a genuine shortage of stocks in sellers

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.....	.24	.24	.24	Acetaldehyde, drs 1c-1 wks...lb.	.18½	.21	.26	.18½
.....	.20	.20	.20	Acetanilid, tech, 150 lb bbl....lb.	.23	.24	.24	.23
.....	.29	.29	.29	Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.29	.35	.35	.29
.....	.38	.32	.37	Acetin, tech drums.....lb.				
				Acetone, CP, 700 lb drums c-l	.....	.15	.15	.13
.02½	.12	.12	.12	wks.....lb	.....	.15	.15	.13
1918	1.65	1.65	1.65	Acetone Oil, drs NY.....gal.	1.65	1.75	1.75	1.65
.....	.42	.42	.42	Acetyl Chloride, 100 lb cby...lb.	.42	.45	.45	.42
				Acids				
				Acid Acetic, 28% 400 lb bbls				
1.50	3.38	3.38	3.38	c-1 wks.....100 lb.	.....	3.88	3.88	3.38
.....	11.92	11.92	11.92	Glacial, bbl c-1 wk...100 lb	.....	13.68	13.68	11.92
.....	.98	.98	.98	Anthranilic, refd, bbls.....lb.	.98	1.00	.00	.98
.....	.80	.80	.80	Technical, bbls.....lb.	.....	.80	.80	.80
1.00	1.60	1.25	1.38	Battery, cbys.....100 lb.	1.60	2.25	2.25	1.60
.23	.57	.57	.57	Benzoic, tech, 100 lb bbls...lb.	.57	.60	.60	.57
				Boric, crys. powd, 250 lb				
.07½	.08½	.08½	.08½	bbls.....lb.	.08½	.11	.11	.08½
.....	1.25	1.25	1.25	Broenner's, bbls.....lb.	.....	1.25	1.25	1.25
1917	.85	.80	.84	Butyric, 100% basis cbys...lb.	.85	.90	.90	.85
1917	4.90	4.85	4.89	Camphoric.....lb.	.....	4.85	4.85	4.85
.....	.25	.25	.25	Carbolic, 10%, 50 gal bbls..lb.	.13	.14	.28	.13
				Chlorosulfonic, 1500 lb drums				
....	.15	.15	.15	wks.....lb.	.15	.16	.16	.15
1918	.37	.25	.29	Chromic, 99%, drs extra...lb.	.25	.30	.30	.25
.....	1 00	1.00	1.00	Chromotropic, 300 lb bbls..lb.	1.00	1.06	1.06	1.00
				Citric, USP, crystals, 230 lb				
.53	.44½	.43	.43²⁹⁄₃₂	bbls.....lb.	.46	.59	.44½	.59
.....	.95	.95	.95	Cleve's, 250 lb bbls.....lb.	.95	.97	.97	.95
1918	.60	.57	.61	Cresylic, 95%, dark drs NY..lb.	.70	.72	.70	.68
1918	.70	.60	.63½	97-99%, pale drs NY...lb.	.72	.77	.72	.72
				Formic, tech 85%, 140 lb				
1918	.11	.10	.10½	cby.....lb.	.11	.12	.12	.11
1918	.50	.50	.50	Gallic, tech, bbls.....lb.	.50	.55	.55	.50
1918	.74	.69	.72	USP, bbls.....lb.	...	.74	.74	.74
.....	1.00	1.00	1.00	Gamma, 225 lb bbls wks...lb.	1.00	1.06	1.06	1.00
1918	.57	.57	.57	H, 225 lb bbls wks.....lb.	.57	.63	.63	.57
.....	.67	.65	.65½	Hydriodic,USP,10%soln cbylb.	...	.67	.67	.67
				Hydrobromic, 48%, coml, 155				
.....	.45	.45	.45	lb cbys wks.....lb.	.45	.48	.48	.45
				Hydrochloric, CP, see Acid				
				Muriatic.....				
.....	.80	.80	.80	Hydrocyanic, cylinders wks lb.	.80	.90	.90	.80
				Hydrofluoric, 30%, 400 lb bbls				
.03	.06	.06	.06	wks.....lb.	.....	.06	.06	.06
				Hydrofluosilicic, 35%, 400 lb				
.....	.11	.11	.11	bbls wks.....lb.	.....	.11	.11	.11
				Hypophosphorous, 30%, USP,				
.....	.85	.85	.85	demijohns.....lb.	.....	.85	.85	.85
.019	.05½	05½	.05½	Lactic,22%,dark,500 lb bbls lb.	.04½	.05½	.06	.04½
.04	.13	.13	.13	44%, light, 500 lb bbls ...lb.	.12	.12½	.13½	.12
.....	.52	.52	.52	Laurent's, 250 lb bbls.....lb.	.52	.54	.54	52
				Malic, powd., kegs.....lb.	.48	.60	.60	.48
.....	.60	.60	.60	Metanilic, 250 lb bbls.....lb.	.60	.65	.65	.60
				Mixed Sulfuric-Nitric.....				
1918	.07¾	.07¾	.07¾	drs wks.....N unit	.07¾	08	.08	.07¾
1918	.01	.01	.01	drs wks.....S unit	.01	.01½	.01½	.01
.....	.21	.18	.19½	Monochloroacetic, tech bbl.lb.	.18	.21	.21	.18
.....	1.65	1.65	1.65	Monosulfonic, F Delta bbls.lb.	.....	.65	.65	.65
				Muriatic, 18 deg, 120 lb cbys				
1.15	1.35	1.35	1.35	c-1 wks.....100 lb.	.....	1.40	1.40	1.35
1.30	1.70	1.70	1.70	20 degrees, cbys wks..100 lb.	1.70	1.80	1.80	1.70
.....	.95	.95	.95	N & W, 250 lb bbls.....	.85	.95	.95	.85
1918	.55	.55	.55	Naphthionic, tech, 250 lb	.55	.59	.59	.55
				Nitric, 36 deg, 135 lb cbys c-1				
3.37½	5.00	5.00	5.00	wks.....100 lb.	.....	5.00	5.00	5.00
4.50	6.00	6.00	6.00	40 deg, 135 lb cbys, c-1				
.07½	.11½	.11	.11	wks.....100 lb.	.....	6.00	6.00	6.00
.036	.08	.07	.07½	Oxalic, 300 lb bbls wks NY..lb.	.11	.11½	.11½	.10¾
.23	.19	.16	.16¾	Phosphoric 50%, 150 lb cby.lb.	.08	.08½	.08½	.08
1918	.50	.50	.50	Syrupy, USP, 70 lb drs...lb	.....	.16	.16	.16
.50	.45	.30	.41½	Picramic, 300 lb bbls.....lb	.....	.50	.50	.50
				Picric, kegs.....lb.	.40	.50	.50	.40
				Pyrogallic, technical, 200 lb				
.....	.86	.86	.86	bbls.....lb.	.....	.86	.86	.86
.22½	.27	.27	.27	Salicylic, tech, 125 lb bbl...lb.	.27	.32	.32	.27
1918	.15	.15	.15	Sulfanilic, 250 lb bbls.....lb.	.15	.16	.16	.15
				Sulfuric, 66 deg, 180 lb cbys				
1.00	1.60	1.60	1.60	1c-1 wks.....100 lb.	1.60	1.95	1.95	1.60
1.00	1.20	1.20	1.20	1500 lb dr wks.....100 lb.	.....	1.20	1.20	1.20
.87½	1.10	1.10	1.10	60°, 1500 lb dr wks..100 lb.	.....	1.12½	1.12½	1.12½
				Oleum, 20%, 1500 lb drs 1c-1				
1.25	1.50	1.50	1.50	wks.....100 lb.	.....	1.52½	1.52½	1.52½
.....	42.00	42.00	42.00	40%, 1c-1 wks net.....ton	.....	42.00	42.00	42.00
.55	.30	.30	30	Tannic, tech, 300 lb bbls...lb.	.30	.40	.40	.30
				Tartaric, USP, crys, powd, 300				
.30½	.37	.29½	.32½	300 lb bbls.....lb.	.37	.38	.38	.34½
.....	.85	.85	.85	Tobias, 250 lb bbls.....lb.	.....	.85	.85	.85

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

hands. Consuming interest during October has been quite brisk and while the market price has not changed, makers are experiencing some difficulty in taking care of all orders.

Albumen — This has been rather a backward season for egg albumen as demand has been rather subnormal. As a result there is as yet no indication of any shortage of stocks and prices have remained unchanged.

Alcohol — There has been a general advance in price since the last report. Also the movement of stocks into buyers hands for consumption in anti-freeze compounds is now fully under way and the market presents a firm outlook. Confirmation of a report that another merger is about to take place should be a factor in helping the market to retain its strong position as the consolidation of varied interests into one group always does. Reports are heard of some price inducments being offered in the New York district, but producers class this as the work of small factions who are endeavoring to gain a foothold on this market. Spot business aside from the sale for anti-freeze work is about as usual and interest of producers and buyers alike centers in speculation as to which concerns will be included in the merger mentioned.

Ammonia — The demand for anhydrous ammonia in cylinders has fallen off since the Summer and this section of the market is rather quiet at this writing and has been during the entire month. The market for aqua is in very good shape with a satisfactory movement reported in all quarters. It is expected that the 1929 price schedule will be released shortly after the middle of November. At this writing no change is expected from the prevailing schedule.

Ammonium Bicarbonate — The market is unchanged and quiet at this writing as has been the case throughout the month. No activity is expected until well after the first of the year, when the new contract season is encountered.

Ammonium Chloride — Movement during the month has not been very brisk. No new prices for next year have been announced. There has been some competition from importers noted of recent weeks. This has not been the case for some months past due to the rather drastic cut which was put into effect by domestic manufacturers last Spring to meet this competition. In view of this condition a further reduction in the domestic price before the first of the year would not be surprising. At present the market is maintained at $4.65 100 lbs. in carloads.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.....	2.75	2.00	2.60	Trichloroacetic, bottles....lb.	.....	2.75	2.75	2.75
.....	2.00	2.00	2.00	Kegs....lb.	.....	2.00	2.00	2.00
.....	1.00	1.00	1.00	Tungstic, bbls....lb.	1.00	1.25	1.25	1.00
.19	.45	.45	.45	Albumen, blood, 225 lb bbls...lb.	.43	.47	.55	.43
.40	.95	.80	.87	Egg, edible....lb.	.78	.83	.84	.78
.....	.92	.77	.82	Technical, 200 lb. cases...lb.	.70	.75	.80	.70
1918	.60	.60	.60	Vegetable, edible....lb.	.60	.65	.65	.60
.....	.50	.50	.50	Technical....lb.	.50	.55	.55	.50
.....	20	.19	.19½	Alcohol Butyl, Normal, 50 gal drs c-l wks....lb.	.....	18.25	.20	.18½
.....	.20½	.19½	.19½	Drums, 1c-1 wks....lb.	.....	18.75	.19½	.18½
.....	.19½	.18½	.19	Tank cars wks....lb.	.....	17.75	.19	.17½
.....	.....	.....	.....	Amyl (from pentane) drs c-l wks....gal.	.....	1.67	2.25	1.75
.....	.....	.....	.....	Diacetone, 50 gal drs del...gal.	1.70	1.80	1.80	1.70
1.70	1.70	1.70	1.80	Ethyl, USP, 190 pf, 50 gal bbls....gal.	.....	2.69½	3.70	2.65
2.50	3.70	3.70	3.70	Anhydrous, drums....gal.	.....	.66½	.55	.50
.....	.50	.50	.50	Completely denatured, No. 1, 190 pf, 50 gal drs drums extra....gal.	.....	.49	.52	48½
1919	.52	.37½	.46	No. 5, 188 pf, 50 gal drs. drums extra....gal.	.....	.48	.50	.43
1918	.50	.29	.42	Tank, cars....gal.	.....	.45	.46	.41
.....	.46	.25	.40	Isopropyl, ref, gal drs....gal.	1.00	1.25	1.25	1.00
.....	1.00	1.00	1.00	Propyl Normal, 50 gal dr...gal.	.....	1.00	1.00	1.00
.....	1.00	1.00	1.00	Aldehyde Ammonia, 100 gal dr lb	.80	.82	.82	.80
.....	.80	.80	.80	Alpha-Naphthol, crude, 300 lb bbls....lb.	.....	.65	.65	.65
1918	.65	.65	.65	Alpha-Naphthylamine, 350 lb bbls....lb.	.35	.37	.37	.35
1917	.35	.35	.35	Alum Ammonia, lump, 400 lb bbls, 1c-1 wks....100 lb.	3.25	3.30	3.30	3.25
1.75	3.25	3.15	3.08½	Chrome, 500 lb casks, wks ....100 lb.	5.25	5.50	5.50	5.25
5.00	5.25	5.25	5.25	Potash, lump, 400 lb casks wks....100 lb.	3.10	3.20	3.20	3.10
4.00	3.50	3.10	3.43	Chrome, 500 lb casks wks ....100 lb.	5.25	5.50	5.50	5.25
5.00	5.25	5.25	5.25	Soda, ground, 400 lb bbls wks....100 lb.	.....	3.75	3.75	3.75
.....	3.75	3.75	3.75	Aluminum Metal, c-1 NY.100 lb.	.....	24.30	26.00	24.30
17.00	27.00	26.00	26.08	Chloride Anhydrous, 275 lb drums....lb.	.35	.40	.40	.35
.....	.35	.35	.35	Hydrate, 96%, light, 90 lb bbls....lb.	.17	.18	.18	.17
.12	.17	.17	.17	Stearate, 100 lb bbls....lb.	.18	.22	.24	.18
.....	.23	.23	.23	Sulfate, Iron, free, bags c-1 wks....100 lb.	.....	1.75	1.75	1.75
1.25	1.75	1.75	1.75	Coml, bags c-1 wks..100 lb.	.....	1.40	1.40	1.40
.87½	1.40	1.35	1.35½	Aminoazobenzene, 110 lb kegs.lb.	.....	1.15	1.15	1.15
.....	1.15	1.15	1.15	**Ammonium**				
.25	.13½	.10	.10½	Ammonia, anhyd, 100 lb cyl...lb.	.13½	.14	.14	.13½
.04½	.03	.02½	.03	Water, 26°, 800 lb dr del....lb.	.....	.03½	.03	.03
				Bicarbonate, bbls., spot 100 lbs.,	6.00	6.50	.....	.....
.....	.21	.21	.21	Bifluoride, 300 lb bbls....lb.	.21	.22	.22	.21
.08	.08½	.08½	.08½	Carbonate, tech, 500 lb cs...lb.	.08½	.09	.09	.08½
6.25	5.05	4.85	5.00	Chloride, White, 100 lb. bbls. wks....100 lb.	4.65	5.15	5.15	4.65
.05½	.07	.05½	.06	Gray, 250 lb bbls wks....lb.	5.25	5.75	5.75	5.25
.10	.11	.11	.11	Lump, 500 lb cks spot....lb.	.11	.11½	.11½	.11
.....	.15	.15	.15	Lactate, 500 lb bbls....lb.	.15	.16	.16	.15
.15	.06	.06	.06	Nitrate, tech, casks....lb.	.06	.10	.10	.06
.....	.27½	.27½	.27½	Persulfate, 112 lb kegs....lb.	.27½	.30	.38	27½
.....	.18	.18	.18	Phosphate, tech, powd, 325 lb bbls....lb.	.....	.18	.18	.18
2.60	2.30	2.55	2.41	Sulfate, bulk c-l....100 lb.	.....	2.40	2.90	2.20
2.60	2.55	2.35	2.42	Southern points....100 lb.	.....	2.45	3.00	2.50
.....	59.70	56.85	57.56	Nitrate, 26% nitrogen 31.6% ammonia imported bags....ton	.....	60.85	60.85	60.85
.....	.55	.55	.55	Sulfocyanide, kegs....lb.	.55	.60	.60	.55
1.55	2.25	1.90	2.10½	Amyl Acetate, (from pentane) drs....gal.	1.80	2.30	2.25	1.80
				Alcohol, see Fusel Oil....				
.10½	.15½	.15	.15	Aniline Oil, 960 lb drs....lb.	.15½	.16½	.16½	.15½
.32	.41	.41	.41	Annatto, fine....lb.	.41	.48	.48	.41
.....	.90	.90	.90	Anthraquinone, sublimed, 125 lb bbls....lb.	.90	1.00	1.00	.90
.....	.11½	.14	.12	Antimony, metal slabs, ton lots ....lb.	.....	.10½	.12	.09½
.03½	.15½	.14	.15	Needle, powd, 100 lb cs....lb.	.....	.11	.12	.10
1918	.17	.17	.17	Chloride, soln (butter of) cbys....lb.	.17	.18	.18	.17
.06	.16½	.16½	.16½	Oxide, 500 lb bbls....lb.	.....	.10½	.12	.10
.11½	.28	.25½	.26½	Salt, 66%, tins....lb.				
.18	.20	.16	.17½	Sulfuret, golden, bbls....lb.	.16	.20	.20	.16
.15	.42	.37½	.38	Vermilion, bbls....lb.	.38	.42	.42	.38
.14	.18	.18	.18	Archil, conc, 600 lb bbls....lb.	.17	.19	.19	.17
.08	.12	.12	.12	Double, 600 lb bbls....lb.	.12	.14	.14	.12
.....	.16	.14	.15	Triple, 600 lb bbls....lb.	.15	.16	.16	.15
.....	.15	.12½	.13½	Argols, 80%, casks....lb.	.....	.08	.08	.08
.....	.08	.03	.06½	Coude, 30%, casks....lb.	.15	.16	.16	.15
.05½	.10½	.10½	.10½	Arsenic, Red, 224 lb kegs, cs..lb.	.10½	.11	.11	.10½
.03	.04	.03½	.04	White, 112 lb kegs....lb.	.04	.04½	.04	.03½
.....	14.75	14.75	14.75	Asbestine, c-1 wks....ton	.....	14.75	14.75	14.75
.....	47.50	47.50	47.50	Barium, Carbonate, 200 lb bags wks....ton	57.00	58.00	57.00	47.00
.13	.12	.12	.12	Chlorate, 112 lb kegs NY...lb.	.12	.12½	.12½	.12
30.00	65.00	57.50	60.70	Chloride, 800 lb bbl wks...ton	64.00	66.00	60.00	54.00
1916	.13	.13	.13	Dioxide, 88%, 690 lb drs...lb.	.13	.13½	.13½	.13
.....	.04½	.04½	.04½	Hydrate, 500 lb bbls....lb.	.04	.04½	.04½	.04½
.05½	.07½	.07½	.07½	Nitrate, 700 lb casks....lb.	.07½	.08	.08	.07½
17.00	23.00	23.00	23.00	Barytes, Floated, 350 lb bbls wks....ton	23.00	24.00	24.00	23.00
.....	.....	.....	.....	Bauxite, bulk, mines....ton	5.00	8.00	8.00	5.00
.39	.40	.37	.39	Beeswax, Yellow, crude bags..lb.	.36	.37	.38	.36
.40	.46	.38	.43	Refined, cases....lb.	.41	.42	.43	.41

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Prices Current and Comment

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Ammonium Persulfate — Demand continues quite brisk and as a result there has been a slight advance in the inside price to 27½c lb. No cecession in the demand is anticipated and as a result the market is expected to continue at its present levels for some time.

Ammonium Sulfate — Has passed through a very dull month with but little activity and no price changes noted. There has been some price shading but quotations remain at $2.40 per 100 lbs. in New York.

Antimony — Metal has declined ⅞c lb. since last reported. The tendency, especially during the past two weeks, has been decidedly downward. The market here has been weak both because of a lack of consuming interest here and a weakness in the primary market, where offerings have been plentiful. Needle and oxide have also declined, the former to 11c lb. and the latter to 10½c lb.

Barium Chloride — The firmness which has been in evidence for the past eight weeks has continued during the month and at the close of the month quotations were at $64.00 @ $68.00 ton according to seller and quantity. Sales have been quite brisk during the period under report and stocks are not very extensive in any quarter.

Benzene — Based on a strong market, sellers have advanced the price 1c a gal. during the month and quotations are now at the 23c gal. level. Demand from consuming trades is very brisk and the November output already has been accounted for. Because of this there is no accumulation of stocks and there is no evidence whatever of any pushing for sale on the producers part.

Bleaching Powder — Sales have been in better volume during the past few weeks as is customary during the Fall period. As practically all business is on a contract basis there has not been any change in this price position.

Blood — Has become very scarce during the past month so that prices quoted at New York are purely nominal. Production has not been very great and most of that has gone into feed. Quotations are at $4.75 per unit in New York, and $5.00 per unit on Chicago and South American shipments.

Bordeaux Mixture — Producers have announced 1929 contract prices as 10c lb., barrels, carlots, and 10½c @ 12c lb. for less than carlots. This was a concession of ½c lb. over prevailing prices.

Butyl Acetate — This market has been characterized by a certain unsteadiness which has become apparent since our last

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.47½	.58	.56	.57½	White, cases.....lb.	.56	.58	.58	.56
.....	.65	.65	.65	Benzaldehyde, technical, 945 lb drums wks.....lb.	.65	.70	.70	.65
.....	.23	.21	.22	Benzene, 90%, Commercial, 8000 gal tanks wks.....gal.	.....	.23	.23	.21
.....	.23	.21	.22½	CP, tanks works.....gal.	.....	.23	.23	.21
.....	.70	.70	.70	Benzidine Base, dry, 250 lb bbls.....lb.	.70	.74	.74	.70
.....	1.00	1.00	1.00	Benzoyl, Chloride, 500 lb drs..lb.	.....	1.00	1.00	1.00
.....	.....	.....	.....	Benzyl, Chloride, tech drs....lb.	.....	.25	.25	.25
.....	.24	.24	.24	Beta-Naphthol, 250 lb bbl wk.lb	.24	.26	.26	.24
.....	1.35	1.35	1.35	Naphthylamine, sublimed, 200 lb bbls.....lb.	.....	1.35	1.35	1.35
.....	.63	.63	.63	Tech, 200 lb bbls.....lb.	.63	.65	.65	.63
75.00	80.00	80.00	80.00	Blanc Fixe, 400 lb bbls wks...ton	80.00	90.00	90.00	80.00
1.20	2.25	2.00	2.23	Bleaching Powder, 300 lb drs c-1 wks contract....100 lb.	.....	2.25	2.25	2.25
.....	2.25	2.00	2.02	700 lb drs c-1 wks contract .....100 lb.	.....	4.00	2.00	2.00
3.00	3.75	4.75	4.47½	Blood, Dried, fob, NY.....Unit	.....	4.75	5.25	4.65
.....	.....	.....	.....	Chicago.....Unit	.....	5.00	5.35	4.75
.....	.....	.....	.....	S. American shipt.....Unit	.....	5.00	5.05	4.50
.27	.30	.28	.29	Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.31	.35	.35	.31
28.50	38.00	29.00	29.04	Bone, raw, Chicago.....ton	29.00	30.00	30.00	29.00
.....	.06	.06	.06	Bone, Ash, 100 lb kegs.....lb.	.06	.07	.07	.06
.02½	.08½	.08½	.06	Black, 200 lb bbls.....lb.	.....	.08½	.08½	.08½
20.00	30.00	28.00	29.46	Meal, 3% & 50%, Imp....ton	.....	32.00	37.00	32.00
.04	.04½	.04½	.04½	Borax, crys, 500 lb bbls.....lb.	.02½	.03½	.05	.02½
.07	.11	.11	.11	Bordeaux, Mixture, 16% pwd.lb.	.10½	.12	.12	.10½
.03½	.08	.08	.08	Paste, bbls.....lb.	.08	.10	.10	.08
55.00	28.00	26.00	27.30	Brazilwood, sticks, shpmt.....lb.	26.00	28.00	28.00	26.00
1918	.60	.60	.60	Bronze, Aluminum, powd blk.lb.	.60	1.20	1.20	.60
.....	.55	.55	.55	Gold, bulk.....lb.	.55	1.25	1.25	.55
.....	1.60	1.42	1.52	Butyl, Acetate, normal drs 1c-1 wks.....gal.	.....	1.45	1.60	1.60
.....	1.55	1.42	1.47½	Tank, drs wks.....gal.	.....	1.40	1.55	1.55
.....	1.00	1.00	1.00	Secondary, 50 gal drs.....gal.	1.00	1.05	1.05	1.00
.....	.70	.70	.70	Aldehyde, 50 gal drs wks...lb.	.....	.70	.70	.70
.....	.34	.34	.34	Propionate, drs.....lb.	.34	.36	.36	.34
.....	.60	.60	.60	Stearate, 50 gal drs.....lb.	.....	.60	.60	.60
.....	.57	.57	.57	Tartrate, drs.....lb	.57	.60	.60	.57
1918	1.50	1.35	1.42	Cadmium, Sulfide, boxes.....lb.	1.35	2.00	2.00	1.35
				Calcium				
.....	3.50	3.50	3.50	Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	4.50	4.50	3.50
.....	.07½	.07½	.07½	Arsenate, 100 lb bbls c-1 wks.....lb.	.07	.09	.09	.06
.....	.05	.05	.05	Carbide, drs.....lb.	.05	.06	.06	.05
.....	1.00	1.00	1.00	Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00	1.00
1918	27.00	27.00	27.00	Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	25.00	27.00	25.00
12.00	21.00	21.00	21.00	Solid, 650 lb drs c-1 fob wks .....ton	20.00	22.00	23.00	20.00
.....	52.00	52.00	52.00	Nitrate, 220 lb bbls c-1 NY.ton	.....	52.00	52.00	52.00
.....	.09	.09	.09	Phosphate, tech, 450 lb bbls.lb.	.07	.08	.08	.07
.....	.....	.....	.....	Camwood, Bark, ground bbls.lb.	.....	.18	.18	18
22	.33	.33	.30½	Candelilla Wax, bags.....lb.	.23	.24	.28	.23
.....	.08	.08	.08	Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.15	.08
.....	.12	.12	.12	Black, 100-300 lb cases 1c-1 NY.....lb.	.....	.12	.12	.12
.06½	.05½	.05½	.05½	Bisulfide, 500 lb drs 1c-1 NY.....lb.	.05½	06	.06	.05½
.....	.06	.06	.06	Dioxide, Liq, 20-25 lb cyl...lb.	.....	.06	.06	.06
.07½	.07	.07	.07	Tetrachloride, 1400 lb drs delivered.....lb.	.07	.07½	.07½	.07
.50	.50	.50	.50	Carnauba Wax, Flor, bags....lb	.52	.53	.58	.52
.....	.90	.54	.60½	No. 1 Yellow, bags.....lb.	.45	.46	.60	.45
.32	.37	.24	.31	No. 2 N Country, bags.....lb.	.34	.35	.38	.34
.42½	.68	.48	.56	No. 2 Regular, bags.....lb.	.40	.41	.56	.40
.....	.....	.....	.....	No. 3 N. C.....lb	.26	.27	.32	.26
.....	.....	.....	.....	No. 3 Chalky .....lb.	.27	.28	.32	.26
.....	.18½	.15½	.17	Casein, Standard, ground.....lb.	.14½	.15	.18½	.14½
.....	.34	.26	.32½	Celluloid, Scraps, Ivory cs....lb.	.26	.30	.30	.26
.....	.18	.18	.18	Shell, cases.....lb.	.18	.20	.20	.18
.....	.34	.26	.32½	Transparent, cases.....lb.	.30	.32	.32	.30
.....	1.40	1.40	1.40	Cellulose, Acetate, 50 lb kegs..lb.	.....	1.40	1.40	1.40
.....	.03	.03	.03	Chalk, dropped, 175 lb bbls...lb.	.03	.03½	.03½	.03
.03	.02½	.02½	.02½	Precip, heavy, 560 lb cks...lb.	.....	.04½	.04½	.04½
.04	.04½	.04½	.04½	Light, 250 lb casks.....lb.	.02½	.03½	.03½	.02½
.....	.18	.18	.18	Charcoal, Hardwood, lump, bulk wks .....bu.	.18	.19	.19	.18
1918	.06	.06	.06	Willow, powd, 100 lb bbl wks.....lb.	.06	.06½	.06½	.06
.....	.04	.04	.04	Wood, powd, 100 lb bbls....lb.	.04	.05	.05	.04
.....	.03	.02½	.03	Chestnut, clarified bbls wks,..lb.	.02½	.03	.03	.02½
.04	.02	.01½	.02	25% tks wks.....lb.	.01½	.02	.02	.01½
.....	.05½	.05½	.05½	Powd, 60%, 100 lb bgs wks.lb.	.....	.04 4/5	.04 4/5	.04 4/5
.....	.06½	.06½	.06½	Powd, decolorized bgs wks..lb.	.05½	.06	.06	.05½
8.00	8.00	8.00	8.00	China Clay, lump, blk mines.ton	8.00	9.00	9.00	8.00
.....	.01½	.01½	.01½	Powdered, bbls.....lb.	.01½	.02	.02	.01½
.....	10.00	10.00	10.00	Pulverized, bbls wks.....ton	10.00	12.00	12.00	10.00
14.00	15.00	15.00	15.00	Imported, lump, bulk. ton	15.00	25.00	25.00	15.00
.....	.03	.03	.03	Powdered, bbls.....lb	.03	.03½	.03½	.03
1918	.08	.08	.08	Chlorine, cyls 1c-1 wks contract .....lb.	.08	.09	.09	08
1917	.05½	.04	.04	Liq tank or multi-car lot cyls wks contract.....lb.	.....	.03½	.03½	03½
1918	.07	.07	.07	Chlorobenzene, Mono, 100 lb. drs 1c-1 wks.....lb.	.....	.07	.07	.07
.19	.20	.20	.20	Chloroform, tech, 1000 lb drs..lb.	.20	.22	22	.20
.....	1.00	1.00	1.00	Chloropicrin, comml, cyls....lb.	1.00	1.35	1.35	1.00

Isco CHEMICALS News Notes

ESTABLISHED 1816

"Over a Century of Service and Progress"

Factories:
Niagara Falls, N. Y.
Murphysboro, Ill.
Owego, N. Y.
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INNIS, SPEIDEN & COMPANY
ESTABLISHED 1816
46 CLIFF STREET, NEW YORK

Branches:
Chicago
Boston
Philadelphia
Cleveland
Gloversville

1816 NOVEMBER, 1928 1928

CHEMICAL BUSINESS FIRM AND ACTIVE

We should say that business in general shows an improvement over the months of September and October, and a firm undertone in the market is noted as well as an active demand for most of the standard chemical products. We anticipate good business for the balance of the year. Fortunately, our candidate for President, Will Rogers, on the "anti-bunk ticket," was not elected. We were for him. He didn't claim to control the weather bureau, nor did he make any campaign speeches. Political promises, yes, but we were told in advance they wouldn't be kept. If elected, he would have done the country well. So much for that! The right man won!

Some chemical price changes took place in October, and with possibly one exception the general price trend was upward.

Chlorine: The price for carload lots, both tank cars and multiple unit tank cars declined about the middle of October ½c a pound, and shortly thereafter the prices for cylinders, both carload and less, were similarly affected. The spot and contract prices for carloads to-day seems to be 3½c per pound at the works for tank cars and multiple unit tank cars. For cylinders 4½c for carloads up to 7½c in a less carload way. Increased production is given as a cause of this decline.

On the other hand **Bleaching Powder** or **Chloride of Lime** is firmly held at old prices with no weakness noticed, and production has actually been restricted to some extent. The carload contract price or large drums is $2.00 at the works per, 100 pounds. The smaller drums and less carload shipments proportionately higher.

Caustic Potash: This article is in firm position; prices are holding up well and the demand very active.

Oxalic Acid: Is in good demand both for the foreign and the domestic article. Supplies are ample for customers' needs.

Naphthalene Flakes and **Balls** are in firmer position for contract over the new season. **Flakes** are held at 5 to 5½c **Balls** 1c higher.

Prussiate of Soda both domestic and imported is held at higher levels, as is also **Yellow Prussiate of Potash.** The increase approximates 1c a pound.

1929 Contracts: The hunting season is here. If we don't get to see you first, get our "low-down" before closing.

TEN YEARS AGO AND NOW

In November, 1918, the World War was ended, and it took its place in the history of INNIS, SPEIDEN & COMPANY along with the Mexican, Civil and Spanish Wars.

With Mr. C. C. Speiden as President, the Company from 1906 to 1918 made rapid strides forward; factories were built and subsidiary producing companies organized to the end that to-day we enjoy a well-rounded chemical line, with which to serve American manufacturing industries.

In 1926, a few months before his death, Mr. C. C. Speiden became Chairman of the Board, and was succeeded as President by Mr. William H. Sheffield, who is our chief executive to-day. The other directors are G. V. Sheffield, Eben C. Speiden, C. L. Speiden, C. C. Wickstead and H. G. MacKelcan.

A progressive policy of keeping abreast of conditions in the industry is vigorously pursued.

Before Closing
Your 1929 Chemical Contracts
Get our bid for YOUR BUSINESS
OUR BUSINESS--*for 112 years has been to deliver the goods!*
1929 *will make it "one up and more to play"*

INNIS, SPEIDEN & CO.
INCORPORATED
Established 1816
Manufacturers, Importers and Manufacturers' Agents of Industrial Chemicals

Prices Current and Comment

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report. Considerable imported competition has been largely responsible for this condition. The market is openly quoted at $1.45 gal. in less carload lots, but this price is subject to shading in some directions under pressure of competition.

Calcium Acetate — Is one of the outstandingly firm items in the entire chemical group. This condition has existed for some time past and is substantiated by an advance of 50c 100 lbs. a short time ago. The market is now at $4.50 100 lbs. and very firm. The demand is in excess of the available supply. At present levels the price is now higher than it has been at any time since the War. A considerable increase in its use by the lacquer and rayon groups has been very influential in causing the present shortage. A scarcity of charcoal is, of course, the immediate reason for this latest advance, but as plants are now at the season where they usually run at capacity production, the situation will probably be relieved in a short while. Conservative estimates of when supplies will be more freely available are placed at from six to eight weeks.

Calcium Chloride — The movement now is very routine and practically negligible. Prices are the same as at the peak of the Summer business and will probably remain so throughout the dull period.

Calcium Arsenate — Producers have announced 1929 contract prices as follows: 7c lb., drums, carlots, and 7½c @ 9c lb. for less carlots. This marked an increase of 1c lb. over previously prevailing prices.

Carbon Black — Has not changed from its firm position over the month and sellers are having no trouble in disposing of stocks as soon as they become available. The increased consuming demand is still much in evidence.

Carnauba Wax — The month has been characterized by inactivity in this market and as a result there have been price declines in several grades. No. 1, yellow, is now at 45c @ 46c lb., No. 2, North Country, at 34c @ 35c lb., and No. 2, regular, at 40c @ 41c lb. Other grades have remained unchanged.

Casein — The market is again lower due to somewhat slackened demand but seems steady now at the new low of 14½c @ 15c lb. According to the Department of Commerce, the market for this product in Argentina was very dull during August. Quotations for dried casein varied between 540 and 560 pesos (value about 42c) per ton. Exports during that month were as follows: to the United States, 913,190 kilos; Germany, 169,607 kilos; England, 55,140 kilos; Spain, 54,120 kilos; and Finland, 20,040 picas.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.17	.27	.26	.26¾	Chrome, Green, CP.....lb.	.26	.29	.29	.26
.03½	.06½	.06½	.06½	Commercial.....lb.	.06½	.11	.11	.06½
.11	.17½	.16½	.16¾	Yellow.....lb.	.15½	.16½	.17	.15½
.....	.05	.04½	.04¾	Chromium, Acetate, 8% Chrome bbls.....lb	.04¾	.05¾	.05¾	.04¾
1918	.05½	.05½	.05½	20 soln, 400 lb bbls.....lb.	....	.05½	.05¾	.05¾
.....	.27	.27	.27	Fluoride, powd, 400 lb bbl.lb	.27	.28	.28	.27
.....	.34½	.34½	.34½	Oxide, green, bbls.....lb	.34½	.35½	.35½	.34½
.....	9.50	9.00	9.08	Coal tar, bbls.....bbl	9.00	9.50	9.50	9.00
1.00	2.10	2.10	2.10	Cobalt Oxide, black, bags....lb	2.10	2.22	2.22	2.10
.48	.92	.77	.85¾	Cochineal, gray or black bag.lb.	.84	.87	.87	.84
.42	.92	.77	.87½	Teneriffe silver, bags.....lb.	.....	.86	.86	.86
13.75	13.57½	12.90	12.97	Copper, metal, electrol...100 lb.	.....	15.25	15.25	12.90
.13½	.16¾	.16¼	.16½	Carbonate, 400 lb bbls.....lb.	.16	.17¾	.17½	.16
.....	.28	.28	.28	Chloride, 250 lb bbls.....lb.	.....	.28	.28	.28
.....	.48	.48	.48	Cyanide, 100 lb drs.....lb.	.48	.50	.50	.48½
.....	.16½	.16½	.16½	Oxide, red, 100 lb bbls.....lb.	.16½	.17	.17	.16½
.28	.18	.17	.18	Sub-acetate verdigris, 400 lb bbls.....lb.	.18	.19	.19	.18
4.00	5.00	4.75	4.91¼	Sulfate, bbls c-1 wks...100 lb.	....	5.30	5.30	5.05
13.00	17.00	13.00	13.33½	Copperas, crys & sugar bulk c-1 wks.....ton	13.00	14.00	14.00	12.00
.....	1.25	1.25	1.25	Sugar, 100 lb bbls.....100 lb.	1.25	1.35	1.35	1.25
.80	.40	.40	.40	Cotton, Soluble, wet, 100 lb bbls.....lb.	.40	.42	.42	.40
.....	42.00	20.00	33.75	Cottonseed, S.E. bulk c-1...ton	.....	.....	.....	.....
.....	42.00	20.00	29.85	Meal S.E. bulk.....ton	.....	.....	.....	.....
26.50	35.00	21.50	30.38	7% Amm., bags mills...ton	37.50	38.00	38.00	36.00
.23¾	.27	.22	.24	Cream Tartar, USP, 300 lb. bbls.....lb.	.26	.27½	.27½	.26
.53	.40	.40	.40	Creosote, USP, 42 lb cbys.....lb.	.40	.42	.42	.40
1918	.20	.20	.20	Oil, Natural, 50 gal drs....gal.	.17	.19	.19	.17
1918	.25	.25	.25	10-15% tar acid.....gal.	.21	.23	.23	.21
				25-30% tar acid.....gal.	.25	.28	.28	.25
1918	.17½	.17½	.17¼	Cresol, USP, drums.....lb.	.17¼	.20	.20	.17½
.07½	.17	.16	.16¼	Cudbear, English.....lb.	.16	.17	.17	.16
.05	.18½	.15	.18	Cutch, Rangoon, 100 lb bales.lb.	.....	.18½	.18½	.18½
.....	.05	.05½	.05½	Borneo, Solid, 100 lb bale...lb.	.06	.07	.07	.06
.....	1.82½	1.67½	1.78¾	Cyanamide, bulk c-1 wks Amm. .....lb.	.....	1.70	1.75	1.67½
.....	3.92	3.77	3.84½	Dextrin, corn, 140lb.bags 100 lb.	4.77	4.97	5.12	3.77
3.00	3.87	3.72	3.78½	White, 130 lb bgs.....100 lb.	4.72	4.92	5.07	3.72
.05½	.08½	.08½	.08½	Potato, yellow, 220 lb bgs...lb.	.08	.09	.09	.08
.05½	.08½	.08½	.08½	White, 220 lb bags 1c-1....lb.	.08	.09	.09	.08
.....	.08¼	.08	.08	Tapioca, 200 lb bags 1c-1...lb.	.08	.08½	.08½	.08
.....	3.80	3.80	3.80	Diaminophenol, 100 lb kegs...lb				
.....	2.95	2.85	2.93½	Diamylphthalate, drs wks...gal.	.....	3.80	3.80	3.80
.....	3.25	3.25	3.25	Dianisidine, 100 lb kegs.....lb.	2.85	2.90	2.90	2.85
.....	.31½	.29½	.30½	Dibutylphthalate, wks.....lb.	.....	.26½	.28	.26½
.....	.55	.55	.55	Dibutyltartrate, 50 gal drs....lb.	.29½	.31½	.31½	.29½
.....	.23	.23	.23	Dichloromethane, drs wks....lb.	.55	.65	.65	.55
.....	2.15	2.15	2.15	Diethylamine, 400 lb drs.....lb.	.23	.25	.25	.23
.....	1.85	1.85	1.85	Diethyl carbonate, drs.....gal.	.....	2.15	2.15	2.15
1918	.55	.55	.55	Diethylaniline, 850 lb drs....lb.	1.85	2.00	2.00	1.85
.....	.20	.20	.20	Diethyleneglycol, drs.....lb.	.55	.60	.60	.55
.....	.....	.....	.....	Mono ethyl ether, drs....lb	.13	.15	.15	.10
.....	.....	.....	.....	Mono butyl ether, drs....lb.	.25	.35	.35	.25
.....	.64	.64	.64	Diethylorthotoluidin, drs.....lb.	.64	.67	.67	.64
.....	.25	.25	.25	Diethyl phthalate, 1000 lb drums.....lb.	.24	.26	.26	.24
.....	.30	.20	.25	Diethylsulfate, technical, 50 gal drums.....lb.	.30	.35	.35	.30
.....	2.60	2.60	2.60	Dimethylamine, 400 lb drs....lb.	.....	2.62	2.62	2.62
1918	.32	.30	.31½	Dimethylaniline, 340 lb drs...lb	.30	.32	.32	.30
.....	.45	.45	.45	Dimethylsulfate, 100 lb drs...lb.	.45	.50	.50	.45
1918	.15½	.15	.15½	Dinitrobenzene, 400 lb bbls...lb.	.15½	.16½	.16½	.15½
.....	.18	.18	.18	Dinitrochlorine, 300 lb bbl....lb.	.18	.19	.19	.18
1918	.15	.15	.15	Dinitrochlorobenzene, 400 lb. bbls.....lb.	.15	.16	.16	.15
1917	.32	.32	.32	Dinitronaphthalene, 350 lb bbls .....lb.	.32	.34	.34	.32
1918	.31	.31	.31	Dinitrophenol, 350 lb bbls....lb.	.31	.32	.32	.31
1918	.18	.15	.17½	Dinitrotoluene, 300 lb bbls....lb.	.18	.19	.19	.18
.....	1.05	.85	.88	Diorthotolyguanidine, 275 lb bbls wks.....lb.	.48	.49	.90	.48
1918	.48	.45	.45½	Diphenylamine.....lb.	.45	.47	.47	.45
.....	.....	.....	.....	Diphenylguanidine, 100 lb bbl.lb.	.40	.41	.72	.40
.....	.26	.26	.26	Dip Oil, 25%, drums.....lb.	.2¢	.30	.30	.26
45.00	49.00	41.00	45.25	Divi Divi pods, bgs shipmt...ton	.....	58.00	62.00	58.00
.02½	.04	.04	.04	Extract.....lb.	.05	.05½	.05½	.05
1918	.84	.72	.67½	Egg Yolk, 200 lb cases.....lb.	.75	.77	80	.73
1.00	2.00	1.75	1.87½	Epsom Salt, tech, 300 lb bbls c-1 NY.....100 lb.	1.70	1.75	1.75	1.70
.22	.45	.37	.43	Esther, USP, 1880, 50 lb drs..lb.	.37	.38	.38	.37
.....	.90	.90	.90	Ethyl Acetate, 85% Ester, 110 gal drs.....gal.	.92	.93	.92	.75
.....	1.10	1.03	1.08	99%, gal drums.....gal.	....	1.10	1.10	1.10
.....	1.05	1.05	1.05	Benzylaniline, 300 lb drs...lb.	1.05	1.11	1.11	1.05
.....	.50	.50	.50	Bromide, tech, drums.....lb.	.....	.70	.70	.70
.....	.22	.22	.22	Chloride, 200 lb. drums....lb.	.....	.27	.22	.22
.....	3.50	3.50	3.50	Lactate, drums works.....lb.	.30	.35	3.50	3.50
1918	.30	.30	.30	Methyl Ketone, 50 gal drs..lb.	.....	.30	.30	.30
.....	.45	.45	.45	Oxalate, drums works.....lb.	.45	.55	.55	.45
.....	.....	.....	.....	Oxybutyrate, 50 gal drs. wks. lb.	.30	.36	.36	.30
.....	.70	.70	.70	Ethylene Bromide, 600 lb dr..lb.	.....	.70	.70	.70
.....	.75	.75	.75	Chlorhydrin, anhydrous, 50 gal drums.....lb.	.75	.85	.85	.75
.....	.15	.11	.11½	Dichloride, 50 gal drums...lb.	.07	.10	.11	.07
.....	.30	.30	.30	Glycol, 50 gal drs wks.....lb.	.27	.30	.40	.25
.....	.....	.....	.....	Mono Butyl Ether drs. wks.	.27	.31	.27	.31
.....	.....	.....	.....	Mono Ethyl Ether drs. wks.	.20	.24	.20	.24
.....	.....	.....	.....	Mono Ethyl Ether Acetate dr. wks.	.23	.26	.23	26.
1918	.62	.62	.62	Ethylidenaniline.....lb.	.62	.65	.65	.62
8.00	20.00	20.00	20.00	Feldspar, bulk.....ton	20.00	25.00	25.00	20.00
.....	15.00	15.00	15.00	Powdered, bulk works.....ton	15.00	21.00	21.00	15.00
.....	.07½	.07½	.07½	Ferric Chloride, tech, crystal 475 lb bbls.....lb.	..07½	.09	.09	.07½

Acetic Acid

Synthetic Glacial

Packing

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50 lbs.
100 lbs.
900 lbs.
Tank Cars

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Paraldehyde
Paraldol

NIACET CHEMICALS CORPORATION
Niagara Falls
NEW YORK

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Chlorine — As was anticipated in our report last month there has been a downward revision in the 1929 contract price. Contracts over next year in tank car units are now being offered on the basis of 3c lb. At the moment sellers are a bit more optimistic as to the maintenance of this level because of the satisfactory volume which has been consummated since the announcement of the new schedule. This downward movement seemed almost inevitable, particularly with the announcement of a new producer in the field who has already been booking contracts for next season. The completion of one of two new plants on the pacific Coast early next year has not added to the firmness of the position. It is true that these plants will have very little effect on the position East of the Mississippi, but they will take care of what portion of the Western business was formerly handled by Eastern producers.

Copper Sulfate — After passing through the two quietest months of the year—September and most of October—the annual export demand is now being noticed and shipments to these markets are now going forward. Stocks have been replenished somewhat but not to the extent that producers would like to enter the Spring buying season with. The copper raw material price continues to advance and the resulting advance in sulfate production cost is almost 3/8c lb. since the advance in price last Spring. This latter factor may force a further advance in the sulfate price regardless of the extent of the consuming demand.

Copperas — The position has not changed over the month. Sellers are taking care of an average demand for this time of year at the quoted level of $13.00 100 lbs.

Dextrin — The expected decline in prices in corn dextrin has not materialized, due chiefly to the fact that grain prices have become firmer again. As a result, prices are unchanged as are those on other dextrins.

Egg Yolk — Prices have advanced somewhat during the past month, and quotations are now at 75c @ 77c lb. This is chiefly due to an advance in the Chinese market where stocks have been almost exhausted and no new supplies will be available until next Spring. The fall operations in the freezing plants are now well under way, according to a report to the Department of Commerce. There is active competition among the packers for eggs. Freezing operations are expected to be fully up to last Fall but the Fall season is normally of comparatively

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
2.80	5.60	4.15	4.69	Fish Scrap, dried, wks.....unit	..... 5.50&10	5.50&10	4.90&10
				Acid, Bulk 7 & 3½% delivered			
2.50	3.50	4.24	3.56½	Norfolk & Balt. basis...unit	..... 4.50&50	4.75&50	4.00&50
.40	1.10	.90	1.01½	Flavine, lemon, 55 lb cases...lb.	1.10 1 15	1.15	1.10
.40	1.10	.85	.89	Orange, 70 lb cases.....lb.	1.10 1.15	1.15	1.10
.....				Flavseed.....lb.			
.....	25.00	25.00	25.00	Fluorspar, 95%, 220 lb bags...lb.	....	.....	.....
.....	.....	.....	.....	Ex-dock.....ton	....	.....	.....
				Formaldehyde, aniline, 100 lb.	..... 25.00	25.00	25.00
.....	.39	.39	.39	drums.....lb.	.39 .42	.42	.39
08½	.11½	.08½	.10	USP, 400 lb bbls 1c-1 wks...lb.	..... .09½	.09	.08½
.....	.02½	.02½	.02½	Fossil Flour.....lb.	.02½ .04	.04	.02½
.....	15 00	15.00	15.00	Fullers Earth, bulk, mines...ton	15.00 20.00	20.00	15.00
.....	25 00	25.00	25.00	Imp, powd c-1 bags.....ton	25.00 30.00	30.00	25.00
.....	.17½	.17½	.17½	Furfural, 500 lb drums.....lb.	.17½ .19½	.19½	.17½
1.10	1.69	1.35	1.59	Fusel Oil, 10% impurities....gal.	..... 1.35	1.35	1.35
.01½	.04	.04	.04	Fustic, chips.....lb.	.04 .05	.05	.04
.....	.20	.20	.20	Crystals, 100 lb boxes.....lb	.20 .22	.22	.20
.06	.09	.09	.09	Liquid, 50°, 600 lb bbls....lb.	.09 .10	.10	.09
.08	.20	.20	.20	Solid, 50 lb boxes.....lb.	.20 .23	.23	.20
12.00	30.00	30.00	30.00	Sticks.....ton	30.00 32.00	32.00	30.00
1918	.50	.50	.50	G Salt paste, 360 lb bbls.....lb.	.50 .52	.52	.50
.12	.20	.20	.20	Gall Extract.....lb.	.20 .21	.21	.20
.04½	.08	.06	.....	Gambier, common 200 lb cs...lb.	.08 .09	.09	.08
1917	.12	.12	.12	25% liquid, 450 lb bbls....lb.	.12 .14	.14	.12
.05½	.23	.11	.17	Singapore cubes, 150 lb bg..lb	.11 .12	.12	.11
.....	.45	.30	.43½	Gelatin, tech, 100 lb cases....lb.	.45 .50	.50	45
.....	3.14	3.14	3.14	Bags, c-1 NY.....100 lb.	3.14 3.24	3.24	3.14
				Glauber's Salt, tech, 250 lb bags			
.60	1 05	1.05	1.05	c-1 wks.....100 lb.	.70 1.05	1.05	.70
				Glucose (grape sugar) dry 70-			
.....	3.24	3.24	3.24	80° bags c-1 NY....100 lb.	3.24 3.34	3.34	3.24
				Tanner's Special, 100 lb bags			
.....	3.14	3.14	3.14	.....100 lb.	..... 3.14	3.14	3.14
.12	.20	.20	.20	Glue, medium white, bbls....lb.	.20 .24	.24	.20
.18	.22	.22	.22	Pure white, bbls.....lb.	.22 .26	.26	.22
.19½	.29	.22	.24	Glycerin, CP, 550 lb drs.....lb.	.15 .15½	.19	.15
.19½	.25	.17	.21½	Dynamite, 100 lb drs.....lb.	.12½ .13	.15	.11½
.....	.....	.....	.....	Saponification, tanks.....lb.	.08½ .08¾	.10½	.08½
.....	.....	.....	.....	Soap Lye, tanks.....lb.	.07½ .08	.09½	.07½
.....	15.00	15.00	15.00	Graphite, crude, 220 lb bgs..ton	15.00 35.00	35.00	15.00
.....	.05	.05	.05	Flake, 500 lb bbls.....lb	.06 .09	.09	.06
				Gums			
				Gum Accroides, Red, coarse and			
.....	.03¾	.03¾	.03¾	fine 140-150 lb bags....lb.	.03¾ .04½	.04½	.03¾
.....	.06	.06	.06	Powd, 150 lb bags.. ...lb.	.06 .06½	.06½	.06
.....	.18	.18	.18	Yellow, 150-200 lb bags..lb.	.18 .20	.20	.18
				Animi (Zanzibar) bean & pea			
.25	.40	.35	.39	250 lb cases.....lb.	.35 .40	.40	.35
.....	.60	.50	.57½	Glassy, 250 lb cases.....lb.	.50 .55	.55	.50
				Asphaltum ,Barbadoes			
.05	.09	.09	.09	(Manjak) 200 lb bags..lb	.09 .12	.12	09
.15	.15	.15	.15	Egyptian, 200 lb cases.....lb.	.15 .17	.17	.15
				Gilsonite Selects, 200 lb bags			
36.00	55.00	55.00	55.00	.....ton	58.00 65.00	65.00	55.00
				Damar Batavia standard 136,			
.17½	.26½	.26½	.25	lb cases.....lb.	.24½ .25	.25	.22½
.....	.10½	.07	.10	Batavia Dust, 160 lb bags..lb.	.10½ .11	.11	.10½
.....	.18½	.17½	.18½	E Seeds, 136 lb cases....lb.	.17 .17½	17½	.16
				F Splinters, 136 lb cases and			
.....	.14	.09	.13	bags.....lb.	.13 .13½	14½	.13
.....	.34	.33½	.34	Singapore, No. 1, 224 lb caseslb.	.30 .30½	.30½	.29½
.14	.22½	.21	.22½	No. 2, 224 lb cases.....lb.	.23½ .24	.24	.20
.08	.14	.11	.12	No. 3, 180 lb bags.....lb.	.13½ .14	.15	.13½
				Benzoin Sumatra, U.S.P....120			
.34	.35	.30	.30	lb cases.....lb.	.45 .48	.48	.33
				Copal Congo, 112 lb bags, clean			
.....	.14	.12	.13	opaque.....lb.	.14 .15	.15	.14
.12	.08½	.08½	.08½	Dark, amber.....lb	.08½ .09	.09	.08½
.18	.12½	.12½	.12½	Light, amber.....lb	.12½ .14	.14	.12½
.25	.35	.35	.35	Water white.....lb	.35 .36	.36	.35
				Mastic.....lb.	.63 .65	.65	.58
				Manila, 180-190 lb baskets			
.15	.16	.16	.16	Loba A.....lb.	.17 .17½	.17½	.16
.....	.15	.15	.15	Loba B.....lb.	.16 .16½	.16½	.15
.....	.14½	.13	.13¾	Loba C.....lb.	.14 .14½	.14	.13
.....	.16	.16	.16	Pale bold, 224 lb cs.....lb.	.17 .19	.19	16
.08½	.14	.12	.13	Pale nubs.....lb	.13 .13½	.13½	.12
.....	.07½	.07½	.07½	East Indies chips, 180lb bagslb.	.10 .11	.11	.07½
.....	.....	.....	.....	Pale bold, 180 lb bags.. .lb.	.20 .21	.21	.17
.....	.17	.17	.17	Pale nubs.....lb.	.15 .16	.16	.14
.....	.....	.....	.....	Pontianak, 224 lb cases....lb			
.13½	.29	.25	.26½	Pale bold gen No. 1.....lb.	.22 .23	.25½	.22
.07	.19	.13	.15½	Pale gen chips spot.....lb.	.14½ .15	.15	.13
.....	.14	.13	.13½	Elemi, No. 1, 80-85 lb cs...lb.	.13½ .14	.14	.13
.....	.13	.12	.12¼	No. 2, 80-85 lb cases.....lb.	.13 .13½	.13½	.13
.....	.13	.11	.11	No. 3, 80-85 lb cases.....lb.	.12 .13	.13	.12
				Kauri, 224-226 lb cases No. 1			
.50	.67½	.57	.63½	.....lb.	.50 .57	.57	.50
.32	.44½	.38	.41	No. 2 fair pale.....lb.	.35 .38	.38	.35
				Brown Chips, 224-226 lb			
.07½	.14½	.10	.12	cases.....lb.	.10 .12	.12	.10
.....	.42	.38	.40	Bush Chips, 224-226 lb			
				cases.....lb.	.38 .40	.40	.38
				Pale Chips, 224-226 lb cases			
.....	.31½	.24½	.25	.....lb.	.24½ .26	.26	.24½
				Sandarac, prime quality, 200			
.19	.27	.25	.25	lb bags & 300 lb casks...lb.	.40 .42	.42	.26
1917	.12	.12	.12	Hematine crystals, 400 lb bbls.lb.	.17 .20	.20	.17
1917	.09	.09	.09	Paste, 500 bbls.....lb	..... .11	.11	.11
.02½	.03½	.03½	.03½	Hemlock 25%, 600 lb bbls wks lb.	.03½ .03¾	.03¾	.03½
.....	16.00	16.00	16.00	Bark.....ton	..... 16.00	16.00	16.00
.....	.60	.45	.56	Hexalene, 50 gal drs wks.....lb.	..... .60	.60	.60
.....	.80	.62	.72	Hexamethylenetetramine, drs.lb.	.56 .58	.56	.62
2.60	3.35	2.75	3.08	Hoof Meal, fob Chicago.....unit	..... 4.00	4.00	4.00

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minor importance for this work as most of the eggs fit for shipment as shell eggs are exported in shell form to Europe. Interior native plants manufacturing dried yolk and albumen will continue to operate for a short time but their output will be small because of seasonally light egg production. Exports of frozen eggs to the United States so far this season, have totaled 5,000 tons compared with 1,250 tons for the corresponding period of last year. During the first nine months of this year, imports of frozen eggs from China totaled 9,637,000 pounds as compared with 2,489,000 lbs. during the similar period of 1927.

Ethyl Acetate — Based on advancing raw material costs, producers again announced an advance during the month on ethyl acetate. Current prices are now named at 92c @ 94c gal. as to quantity. The market is very firm and on a good demand stocks are moving very well at the close of the month.

Fish Scrap — Has become quite scarce and, as a result, prices have advanced during the past month. Dried is now at $5.50 & 10 per unit, while acid is at $4.50 & 50 per unit.

Formaldehyde — Higher raw material costs and a good consuming demand have combined to force an advance of 1c lb. in the U. S. P. grade to 9½c lb. This advance took place about two weeks ago and the sale continues good at the new levels.

Glauber Salts — Much the same listless tone to the market is apparent. Competition for business from many quarters in New England holds the actual selling price far below the scheduled quotations.

Glycerin — The strength reported during the previous month continued during October and sales were made late in the month at 13c lb. for dynamite grade. It now seems doubtful if this price can be shaded. Stocks in this section are limited. The weakness apparent in the foreign market has not effected the local producers view's and they are holding quite firm at the above mentioned levels.

Gums — The market is general in very strong, with supplies scarce, and replacements almost unobtainable. This scarcity extends even to the primary markets and in some cases quotations are being made as far ahead as for delivery in March. Batavia, Mastic, East Indies, and Sandarac are the grades chiefly affected. The latter has advanced 7c lb. since last quoted so that it is now at 40c @ 42c lb. and further advances as far as 45c lb. are expected.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	3.90	3.00	3.57	South Amer. to arrive....unit	.....	.....	.....	.....
.....	.30	.22	.24	Hydrogen Peroxide, 100 vol, 140 lb cbys.....lb.	.24	.26	.26	.24
1917	.12	.12	.12	Hpyernic, 51°, 600 lb bbls....lb.	.12	.15	.15	.12
.58	1.28	1.20	1.27	Indigo Madras, bbls.....lb.	1.28	1.30	1.30	1.28
.....	.14	.14	.14	20% paste, drums.....lb.	.14	.15	.15	.14
.....	.07½	.07½	.07½	Solid, powder.....lb.	.07½	.08	.08	.07½
				Iron Chloride, see Ferric or Ferrous				
.04	.09	.09	.09	Iron Nitrate, kegs.....lb.	.09	.10	.10	.09
1.12½	2.50	2.50	2.50	Coml, bbls.....100 lb.	2.50	3.25	3.25	2.50
.....	.10	.10	.10	Oxide, English.....lb.	.10	.12	.12	.10
.....	.02½	.02½	.02½	Red, Spanish.....lb.	.02½	.03½	.03½	.02½
.....	.85	.85	.85	Isopropyl Acetate, 50 gal drs.gal.	.85	.90	.90	.85
.11½	.29	.17	.19	Japan Wax, 224 lb cases.....lb.	.....	.20	.20	.17
.....	60.00	60.00	60.00	Kieselguhr, 95 lb bgs NY....ton	60.00	70.00	70.00	60.00
.....	14.00	13.00	13.33	Lead Acetate, bbls wks...100 lb.				
9.12½	14.00	13.00	13.33	White crystals, 500 lb bbls wks.....100 lb.	13.00	13.50	13.50	13.00
.04½	.15½	.13½	.13	Arsenate, drs lc-1 wks.....lb.	.13	.15	.15	.13
3.90	7.80	6.20	6.78	Metal, c-1 NY.....100 lb.	.....	6.10	6.25	6.25
.07½	.14	.14	.14	Nitrate, 500 lb bbls wks....lb.	.....	.14	.14	.14
.17½	.17½	.17½	.17½	Oleate, bbls.....lb.	.17½	.18	.18	.17½
.....	.10½	.08½	.09	Oxide Litharge, 500 lb bbls..lb.	.....	.08½	.08½	.08½
.05½	.11½	.09½	.10	Red, 500 lb bbls wks.....lb.	.....	.09½	.09½	09½
.05½	.09½	.09	.09½	White, 500 lb bbls wks...lb.	.....	.09	.09	.09
.05	.09	.08½	.08½	Sulfate, 500 lb bbls wk...lb.	.....	.08½	.08½	.08½
.....	4.50	4.50	4.50	Lime, ground stone bags....ton	.....	4.50	4.50	4.50
.....	1.05	1 05	1.05	Live, 325 lb bbls wks..100 lb.	.....	1.05	1.05	1.05
				Lime Salts, see Calcium Salts				
1918	.15	.15	.15	Lime-Sulfur soln bbls.....gal.	.15	.17	.17	.15
				Lithopone, 400 lb bbls lc-1 wks				
.03½	.06½	.06½	.06½	.....lb.	.....	.06½	.06½	.06½
.05	.08½	.08½	.08½	Logwood, 51°, 600 lb bbls.....lb.	.08½	.08½	.08½	.08½
.01½	.03	.03	.03	Chips, 150 lb bags.....lb.	.03	.03½	.03½	.03
.06	.12	.12	.12	Solid, 50 lb boxes.....lb.	.....	.12½	.12½	.12½
15.00	26.00	26.00	26.00	Sticks.....ton	26.00	27.00	27.00	26.00
.....	.07½	.07½	.07½	Lower grades.....lb.	.07½	.08	.08	.07½
.12	.30	.30	.30	Madder, Dutch.....lb.‡	.....	.30	.30	.30
30.00	48.00	48.00	48.00	Magnesite, calc, 500 lb bbl..ton	48.00	50.00	50.00	48.00

Magnesium

				Magnesium Carb, tech, 70 lb				
1918	.06½	.06	.06	bags NY.....lb.	.06	.06½	.06½	.06
				Chloride flake, 375 lb drs c-1				
.....	37.00	37.00	37.00	wks.....ton	.....	37.00	37.00	37.00
.....	33.00	33.00	33.00	Imported shipment...ton	.....	33.00	33.00	33.00
.....	31.00	31.00	31.00	Fused, imp, 900 lb bbls NY ton	.....	31.00	31.00	31.00
				Fluosilicate, crys, 400 lb bbls				
.....	.10	.10	.10	wks.....lb.	.10	.10½	.10½	.10
				Oxide, USP, light, 100 lb bbls				
.....	.42	.42	.42	.....lb.	.....	.42	.42	.42
.....	.50	.50	50	Heavy, 250 lb bbls.....lb.	.....	.50	.50	.50
.....	.12½	.09½	.11½	Silicofluoride, bbls.....lb.	.09½	.10½	.10½	.09½
.....	.23	.23	.23	Stearate, bbls.....lb.	.23	.25	.25	.23
				Manganese Borate, 30%, 200 lb				
.20	.24	.24	.24	bbls.....lb.	.....	.24	.24	.24
.06	.08	.08	.08	Chloride, 600 lb casks.....lb.	.08	.08½	.08½	.08
.....	.05	.04½	.04½	Dioxide, tech (peroxide) drs.lb.				
				Ore, powdered or granular	.35	.40	.50	.35
.....	.03	.03	.03	75-80%, bbls.....lb.	.03	.03½	.03½	.03
.....	.04	.04	.04	80-85%, bbls.....lb.	.04	.04½	.04½	.04
.....	.05	.05	.05	85-88%, bbls.....lb.	.05	.05½	.05½	.05
.....	.07	.07	.07	Sulfate, 550 lb drs NY.....lb.	.07	.07½	.07½	.07
.....	.03½	.03½	.03½	Mangrove 55%, 400 lb bbls..lb.	.03½	Nom.	Nom.	.03½
.....	39.00	34.00	37.54	Bark, African.....ton	.....	37.00	45.00	37.00
8.00	10.00	10.00	10.00	Marble Flour, bulk.....ton	10.00	12.00	12.00	10.00
1916	129.00	99.00	119.09	Mercury metal.....75 lb flask	124.00	126.00	132.00	121.00
1918	.72	.72	.72	Meta-nitro-aniline .....lb.	.72	.74	.74	.72
				Meta-nitro-para-toluidine 200 lb				
1918	1.70	1.70	1.70	bbls.....lb.	1.50	1.55	1.80	1.50
				Meta-phenylene-diamine 300 lb				
1918	.90	.90	.90	bbls.....lb.	.90	.94	.94	.90
				Meta-toluene-diamine, 300 lb				
1918	.72	.72	.72	bbls.....lb.	.72	.74	.74	.72
.4	.....	.....	.....	Methanol, (Wood Alcohol), drs				
.45	.80	.55	.69	95%.....gal.	.58	.60	.58	.46
.50	.87	.57	.74½	97% drums c-1.....gal.	.60	.62	.60	.47
.....	.....	.....	.....	Pure, drums lc-1.....gal.	.63	.64	.63	.44
.....	.....	.....	.....	Synthetic, drums c-1.....gal.	.....	.56	58	.48
.....	.80	.75	.78	Denat. grd. tanks.....gal.	.60	.62	.75	.45
.....	.95	.95	.95	Methyl Acetate, drums.....gal.	.....	.95	.95	.95
.....	.88	.75	.66	Acetone, 100 gal drums...gal.	.90	.92	.90	.68
.....	1.00	.85	.92½	Anthraquinone, kegs.....lb.	.85	.95	.95	.85
.....	.55	.55	.55	Chloride, 90 lb cyl.....gal.	.55	.60	.60	.55
.....	.03½	.03½	.03½	Mica, dry grd. bags wks.....lb.	65.00	80.00	80.00	65.00
.....	.05½	.05½	.05½	Wet, ground, bags wks.....lb.	110.00	115.00	115.00	110.00
.....	3.00	3.00	3.00	Michler's Ketone, kegs.....lb.	....	3.00	....	....
				Monochlorobenzene, drums see, Chlorobenzene, mono.....lb.				
.....	.70	.70	.70	Monoethylorthotoluidin, drs..lb.	.70	.75	.75	.70
				Monomethylaniline, 900 lb dr				
1918	1.05	1.05	1.05	.....lb.	.....	1.05	1.05	1.05
				Monomethylparaminosulfate 100				
.....	3.95	3.95	3.95	lb drums.....lb.	3.95	4.20	4.20	3.95
.06½	.06½	.06½	.06½	Montan Wax, crude, bags....lb.	.06½	.07	.07	.06½
.....	.04	.04	.04	Myrobalans 25%, liq bbls.....lb.	.04½	.04½	.04½	.04½
.....	.08	.08	.08	50% Solid, 50 lb boxes.....lb.	.08	.08½	.08½	.08
27.00	43.50	41.00	42.00	J 1 bags.....ton	44.00	45.50	50.00	42.50
27.00	37.00	23.50	35.24	J 2 bags.....ton	.....	35.00	40.00	34.50
27.00	37.00	30.00	36.62	R 2 bags.....ton	.....	35.00	40.00	34.50
				Naphtha, v. m. & p. (deodorized)				
.10	.21	.18	.19½	bbls.....gal.	.....	.18	.18	.18

Trisodium Phosphate

Quality as well as quantity is an accomplishment in manufacturing which has made General Chemical Company a principal producer of many of the more common chemicals.

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(Chip Patented)
Anhydrous Bisulphite Soda
Sodium Fluoride
Epsom Salts
Baker & Adamson Quality Reagents, Fine Chemicals and C. P. Acids
Insecticides and Fungicides

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Prices Current and Comment

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Japan Wax — Demand continues good and prices are again higher, now being quoted at 20c lb.

Mangrove Bark — Increased supplies have caused a slight decline in price during the past month so that quotations are now at $37.00 ton.

Mercury — In spite of the concentration of sales under one organization in Europe the price has declined noticeably since the first of October. During the closing days of the month sales were made at $124.00 flask and even at this reduced level the market did not show any particular signs of strength. There seems to be competition for business between the sales organization and dealers in Europe who are able to realize quite a profit even at the lower levels. The latter group is responsible for the gradual easing off in the price at this writing. Prospects of lower prices seem evident.

Methanol — Advances were again recorded during October and methanol is outstanding for its strength at this writing. Demand is very brisk and with sellers more uniformly lined up on their quotations the market is in a stronger position than it has been at any time this year.

Methyl Acetone — Is characterized by the strength which marks practically every other member of this group. There is an acute shortage of stocks at this writing and with a good demand apparent, the price has been advanced 8c gal. since the first of the month to 92c gal. for drums. This advance is attributed to the shortage of supplies.

Nitrogenous Material — Has declined 5c per unit since last reported and is now quoted at $3.75 per unit in a fairly steady market.

Phenol — This article is in much the same position as has marked its course for the past several months. It is believed that a good order would induce the shading of current prices.

Potassium Chlorate — There has been a decided strengthening trend in the position. Sales have been good during the month and a weak seller of imported goods has ceased to be a factor. The domestic price was unchanged at the end of the month, but it has been announced that the price will be 7½c @ 7¾c lb. before this issue is off the press.

Quebracho — Some changes in price have been announced by producers. Thirty-five per cent. liquid, in tanks, is now quoted at 3¼c @ 3¾c lb., while clarified, 64 per cent., is at 5⅝c lb. Argentine's quebracho industry is in

1914	1927				Current	1928	
July	High	Low	Aver.		Market	High	Low
.02½	.06	.05½	.05⅝	Naphthalene balls, 250 lb bbls wks.....lb.	.....	.05½	.06	.05½
.....	.04½	.04½	.04½	Crushed, chipped bgs wks..lb.	.....	.04½	.04½	.04½
.02½	.05	.04½	.04⅝	Flakes, 175 lb bbls wks.....lb.	.....	.05	.05	.05
.....	.21	.21	.21	Nickel Chloride, bbls kegs....lb.	.21	.24	.24	.21
1918	.35	.35	.35	Oxide, 100 lb kegs NY.....lb.	.35	.38	.38	.35
1918	.09	.08½	.08⅝	Salt dbl, 400 lb bbls NY....lb.	.09	.09¼	.09¼	.09
1918	.08¼	.08	.08⅛	Single, 400 lb bbls NY.....lb.	.08¼	.09	.09	.08¼
.....	1.25	1.10	1.24	Nicotine, free 40%, 8 lb tins, cases.....lb.	1.25	1.30	1.30	1.25
.....	1.10	1.10	1.10	Sulfate, 10 lb tins.....lb.	.98½	1.20	1.20	98½
.....	13.00	13.00	13.00	Nitre Cake, 500 lb bbls.....ton	13.00	14.00	14.00	13.00
.06½	.10¼	.09¼	.09⅛	Nitrobenzene, redistilled, 1000 lb drs wks.....lb.	.10¼	.10½	.10½	.10¼
.....	.40	.40	.40	Nitrocellulose, regular drums wks.....lb.	.40	Nom.	Nom.	.40
.....	.55	.55	.55	Low viscosity (soln only) Grade 1 drums, wks.....lb.	.55	Nom.	Nom.	.55
.....	.50	.50	.50	Grade 2 drums, wks.....lb.	.50	Nom.	Nom.	.50
3.05	3.60	3.35	3.53	Nitrogenous Material, bulk..unit	.....	3.75	4.00	3.35
1918	.25	.25	.25	Nitronaphthalene, 550 lb bbls.lb.	.....	.25	.25	.25
1918	.14	.14	.14	Nitrotoluene, 1000 lb drs wks.lb.	.14	.15	.15	.14
.16	.25	.25	.25	Nutgalls Aleppy, bags.....lb.	.25	Nom.	Nom.	.25
.15	.17	.17	.17	Chinese, bags.....lb	.17	.18	.18	.17
.....	.22	.22	.22	Powdered, bags.....lb	.22	.24	.24	.22
.08	.03½	.03½	.03½	Oak, tanks, wks.....lb	....	.03½	.03½	.03½
.08	.04	.04	.04	23-25% liq., 600 lb bbl wk .lb.	.04	.04½	.04½	.04
.....	45.00	45.00	45.00	Oak Bark, ground.....ton	45.00	50.00	50.00	45.00
.....	20.00	20.00	20.00	Whole.....ton	20.00	23.00	23.00	20.00
.07½	.14½	.13	.13½	Orange-Mineral, 1100 lb casks NY.....lb.	.11½	12½	.13½	.13
.....	2.20	2.20	2.20	Orthoaminophenol, 50 lb kgs..lb.	2.20	2.25	2.25	2.20
.....	2.50	2.35	2.36¼	Orthoanisidine, 100 lb drs....lb.	2.35	2.50	2.50	2.35
.....	.50	.50	.50	Orthochlorophenol, drums....lb.	.50	.65	.65	.50
.....	.18	.18	.18	Orthocresol, drums.....lb.	.18	.28	.28	.18
1918	.06	.06	.06	Orthodichlorobenzene, 1000 lb drums.....lb	.06	.07	.07	.06
1918	.32	.32	.32	Orthonitrochlorobenzene, 1200 lb drs wks.....lb.	.32	.35	.35	.32
1918	.13	.13	.13	Orthonitrotoluene, 1000 lb drs wks.....lb.	.17	.18	.18	.17
1918	.85	.85	.85	Orthonitrophenol, 350 lb dr...lb.	.85	.90	.90	.85
1918	.29	.25	.28	Orthotoluidine, 350 lb bbl lc-l.lb.	.29	.31	.31	.29
1918	.70	.70	.70	Orthonitroparachlorphenol, tins .....lb.	.70	.75	.75	.70
.....	.16	.16	.16	Osage Orange, crystals.....lb.	.16	.17	.17	.16
1918	.07	.07	.07	51 deg. liquid.....lb.	.07	.07½	.07	.07
.....	.14½	.14½	.14½	Powdered, 100 lb bags.....lb.	.14½	.15	.15	.14½
.04¾	.06½	.06½	.06½	Paraffin, refd, 200 lb cs slabs 123-127 deg. M. P.....lb.	.06½	.06¾	.06¾	.06½
.05¼	.07½	.07½	.07½	128-132 deg. M.P.....lb.	.07½	.07¾	.07¾	.07½
.06¼	.08	.08	.08	133-137 deg. M.P.....lb.	.08	.08½	.08½	.08
1918	.08¾	.08¾	.08¾	138-140 deg. M.P.....lb.	.08½	.10	.10	.08½
.....	.29	.26	.26½	Para Aldehyde, 110-55 gal drs .lb.	.20½	.23	.28	.20½
1918	1.00	1.00	1.00	Aminoacetanilid, 100 lb bg .lb.	1.00	1.05	1.05	1.00
.....	1.25	1.25	1.25	Aminohydrochloride, 100 lb kegs .....lb.	1.25	1.30	1.30	1.25
.....	.15	.15	.15	Aminophenol, 100 lb kegs...lb.	.....	1.15	1.15	1.15
.....	.50	.50	.50	Chlorophenol, drums.....lb.	.50	.65	.65	.50
.....	.12	.12	.12	Coumarone, 330 lb drums..lb.	.....	.....	.....	.....
.....	2.25	2.25	2.25	Cymene, refd, 110 gal dr...gal.	2.25	2.50	2.50	2.25
1918	.17	.17	.17	Dichlorobenzene, 150 lb bbls wks.....lb.	.17	.20	.20	.17
1918	.53	.50	.50½	Nitroacetanilid, 300 lb bbls.lb.	.50	.55	.55	.50
1917	.52	.52	.52	Nitroaniline, 300 lb bbls wks .....lb.	.48	.49	.49	.48
.....	.32	.32	.32	Nitrochlorobenzene, 1200 lb drs wks.....lb.	.....	.32	.32	.32
1918	2.75	2.75	2.75	Nitro-orthotoluidine, 300 lb bbls.....lb.	2.75	2.85	2.85	2.75
1918	.50	.50	.50	Nitrophenol, 185 lb bbls....lb.	.50	.55	.55	.50
.....	.92	.92	.92	Nitrosodimethylaniline, 120 lb bbls.....lb.	.92	.94	.94	.92
1918	.30	.25	.26	Nitrotoluene, 350 lb bbls...lb.	.....	.30	.30	.30
1918	1.20	1.15	1.18	Phenylenediamine, 350 lb bbls .....lb.	1.15	1.20	1.20	1.15
.....	.40	.40	.40	Toluenesulfonamide, 175 lb bbls.....lb.	.40	.41	.41	.40
.....	.20	.18	.19	Toluenesulfonchloride, 410 lb bbls wks.....lb.	.20	.22	.22	.20
1918	.45	.38	.41	Toluidine, 350 lb bbls wk...lb.	.40	.42	.42	.40
.11	.21	.21	.21	Paris Green, Arsenic Basis 100 lb kegs.....lb.	.....	.25	.25	.20
.....	.19	.19	.19	250 lb kegs.....lb.	.....	.23	.23	.17
.12	.25	.25	.25	Persian Berry Ext., bbls.....lb.	.....	.....	.....	.....
.....	.02½	.02½	.02½	Petrolatum, Green, 300 lb bbl.lb.	.02½	.03	.03	.02½
1918	.18	.16	.17	Phenol, 250-100 lb drums.....lb.	.13	.20	.13	.20
1918	1.35	1.28	1.35	Phenyl - Alpha - Naphthylamine, 100 lb kegs.....lb.	.....	1.35	1.35	1.35
45.00	9.00	8.50	8.75	Phosphate Acid, 16% blk wks.ton	.....	10.10	10.10	9.00
3.00	3.00	3.00	3.00	Phosphate Rock, f.o.b. mines Florida Pebble, 68% basis..ton	3.00	3.15	3.15	3.00
2.00	3.50	3.50	3.50	70% basis.....ton	3.50	3.65	3.65	3.50
.....	4.00	3.85	3.96	72% basis.....ton	4.00	4.15	4.15	4.00
4.00	5.35	5.00	5.09	75-74% basis.....ton	....	5.00	5.00	5.00
4.00	5.75	5.60	5.71½	75% basis.....ton	.....	5.75	5.75	5.75
5.75	6.25	6.00	6.19	77-76% basis.....ton	.....	6.25	6.25	6.25
4.50	5.50	5.00	5.12½	Tennessee, 72% basis.....ton	.....	5.00	5.00	5.00
.....	.35	.35	.35	Phosphorous Oxychloride 175 lb cyl.....lb.	.35	.40	.40	.35
.45	.65	.60	.62	Red, 110 lb cases.....lb.	.60	.65	.65	.60
35	.32	.32	.32	Yellow, 110 lb cases wks.lb.	.....	.32	.32	.32
.	.46	.46	.46	Sesquisulfide, 100 lb cs.....lb.	.....	.46	.46	.46
....	.35	.35	.35	Trichloride, cylinders.....lb.	.....	.....	.....	.....
.....	.18	.18	.18	Phthalic Anhydride, 100 lb bbls wks.....lb.	.18	.20	.20	18

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PITTSBURGH, PA. U. S. A.

Prices Current and Comment

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flourishing condition, according to the Pan American Union. Since 1903 there has been an increase in shipments from that country each year to the present time, with two exceptions. The exceptional years were 1926 and 1927, when something under 300,000 tons a year were exported. The present year promises to be the greatest in quebracho exportation Argentine has ever known. One single company in that country is reported to be manufacturing a ton of extract every three minutes.

Rosin — Advances of 20c @ 50c unit have occurred during the past month. Present quoted prices represent slight declines from higher prices which have prevailed, but furnish a good general indication of how far the market has improved during the past month. Conditions have been fairly firm throughout.

Shellac — Easy conditions, due chiefly to lack of demand, have been prevalent throughout the past month. As a result prices on all grades are lower and are quoted as follows: bone dry, 58½c lb.; garnet, 45c lb.; superfine, 48c lb.; and T. N., 45c lb.

Soda Ash — A continued good movement has been apparent throughout the month. Interest centered in the new price schedule for 1929 which was announced during the month. As was anticipated there was no change made and as a result makers anticipate little or no trouble in booking contracts. Contracts booked to date give indications of another record year in 1929.

Soda, Caustic — There is a genuine shortage of stocks on the spot. This has been a factor in inducing consumers to fall in line more readily on the 1929 contracts. Though there is no change in the price from the prevailing schedule, the scarcity of stocks at this time gives assurance to the consumers that they will not go far wrong in signing up for next season as expediently as possible, with the result that 1929 business consummated to date compares most favorably with that of former years at this time.

Sodium Chlorate — Domestic manufacturers report a continued good demand from agricultural sections, with the demand swinging to the Southern States. This good demand has resulted in the inside price for carlot business being advanced to 6¼c lb. with a range to 7¾c lb. as to quantity.

Sodium Nitrate — Although the past month is said to have shown less current of business than ever before, this market

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.....	40.00	37.00	38 50	Pigments Metallic, red or brown bags, bbls, Pa. wks.....ton	37.00	45.00	45.00	37.00
1918	.63	.63	.63	Pine Oil, 55 gal drums or bbls Destructive dist.....lb.	.63	.64	.64	.63
.....	8.00	8.00	8.00	Prime bbls.....bbl.	8.00	10.60	10.60	8.00
.34	.70	.66	.69	Steam dist. bbls.....gal.	.....	.70	.70	.70
37.50	40.00	40.00	40.00	Pitch Hardwood, ... wks.....ton	40.00	45.00	45.00	40.00
1.50	3.30	3.30	3.30	Plaster Paris, tech, 250 lb bbls .....bbl.	.....	3.30	3.30	3.30
				Potash				
.04½	.07½	.07½	.07½	Potash, Caustic, wks.....lb.	.....	.07½	.07½	.07½
.....	.07½	.07½	.07½	Imported casks c-1.....lb.	.....	.07½	.07½	.07½
8.36	9.00	9.00	9.00	Potash Salts, Rough Kainit 12.4% basis bulk.....ton	.....	9.00	9.00	9.00
.....	9.50	9.50	9.50	14% basis.....ton	.....	9.50	9.50	9.50
13.58	12.40	12.40	12.40	Manure Salts..... 20% basis bulk.....ton	.....	12.40	12.40	12.40
.....	18.75	18.75	18.75	30% basi s bulk .....ton	.....	18.75	18.75	18.75
39.07	36.40	36.40	36.40	Potassium Muriate, 80% basis bags.....ton	.....	36.40	36.40	36.40
25.04	27.00	27.00	27.00	Pot. & Mag. Sulfate, 40% basis bags.....ton	.....	27.00	27.00	27.00
47.57	47 30	47.30	47.30	Potassium Sulfate, 90% basis bags.....ton	.....	47.30	47.30	47.30
.08	.09	.09	.09	Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.09	.09½	.09½	.09
.06½	.08½	.08	.08½	Bichromate Crystals, 725 lb casks.....lb.	.09	.09½	.09½	.08½
.....	.12	.11	.11	Powd., 725 lb cks wks....lb.	.12½	.13	.12½	.12
.....	.16	.16	.16	Binoxiate, 300 lb bbls.....lb..	.16	.17	.17	.16
.....	.30	.30	.30	Bisulfate, 100 lb kegs.....lb.	.....	.30	.30	.30
.03½	.05½	.05½	.05½	Carbonate, 80-85% calc. 800 lb casks.....lb.	.05½	.05½	.05½	.05½
.07½	.08½	.08½	.08½	Chlorate crystals, powder 112 lb keg wks.....lb.	.07½	.08	.09	.06½
.....	.08½	.08½	.08½	Potassium Chlorate, Imp 112 lb kegs NY.....lb.	.07½	.08½	.08½	.07½
	.05¼	.05¼	.05	Chloride, crys bbls.....lb.	.05½	.05½	.05½	.05½
.....	.27	.27	.27	Chromate, kegs.....lb.	.27	.28	.28	.27
.20	.55	.55	.55	Cyanide, 110 lb. cases .....lb.	.55	.57½	.57½	.55
.13	.11½	.11½	.11½	Metabisulfite, 300 lb. bbl..lb.	.11½	.12	.12	.11½
.14	.16	.16	.16	Oxalate, Neut. 225 lb. bbls.lb.	.16	.17	.17	.16
.....	.11	.11	.11	Perchlorate, casks wks.....lb.	.11	.12	.12	.11
.09½	.15½	.14½	.14½	Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	.15	.15½	.15½	.15
.21	.39	.37½	.38	Prussiate, red, 112 lb keg...lb.	.37	.38	.38	.37
.12½	.18	.18	.18	Yellow, 500 lb casks.....lb.	.18	.18½	.18½	.18
.....	.51	.51	.51	Tartrate Neut, 100 lb keg...lb.	.....	.51	.51	.51
.....	.25	.25	.25	Titanium Oxalate, 200 lb bbls .....lb.	.....	.25	.25	25
.....	.04	.04	.04	Pumice Stone, lump bags.....lb.	.04	.05	.05	.04
.04½	.04½	.04½	.04½	250 lb bbls.....lb.	.04½	.06	.06	.04½
.01½	.02½	.02½	.02½	Powdered, 350 lb bags.....lb.	.02½	.03	.03	.02½
2.65	3.75	3.75	3.75	Putty, commercial, tubs..100 lb.	.....	.03½	.03½	.03½
4.25	5.50	5.50	5.50	Linseed Oil, kegs.....100 lb.	.....	.05½	.05½	.05½
.....	3.00	1.50	.94	Pyridine, 50 gal drums.....gal.	.....	1.50	1.50	1.50
.10½	.13	.12	.12½	Pyrites, Spanish cif Atlantic ports bulk.....unit	.13	.13½	.13½	.13
.02½	.03	.03	.03	Quebracho, 35% liquid tks....lb.	.03½	.03½	.03½	.03
.....	.03½	.03½	.03½	450 lb bbls c-1.....lb.	.03½	.04	.04	.03½
.....	.04	.04	.04	35% Bleaching, 450 lb bbl..lb.	.04	.05	.05	.04
.04½	.05	.04½	.04½	Solid, 63%, 100 lb bales cif.lb.	.05½	.05½	.05½	.05
.....	.05	.05	.05	Clarified, 64%, bales.....lb.	.....	.05½	.05½	.05
.01½	.06½	.06½	.06½	Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.06	.05½
.02½	.10	.10	.10	Solid, 100 lb boxes.....lb.	.10	.13	.13	.10
22.00	14.00	14.00	14.00	Bark, Rough.....ton	.....	14.00	14.00	14.00
.....	34.00	34.00	34.00	Ground.....ton	34.00	35.00	35.00	34.00
1918	.45	.45	.45	R Salt, 250 lb bbls wks.....lb.	.45	.46	.46	.45
.03	.18	.18	.18	Red Sanders Wood, grd bbls..lb.	.....	.....	.....	.....
1918	1.25	1.25	1.25	Resorcinol Tech, cans.....lb.	1.25	1.35	1.35	1.25
.27	.67	.57	.59	Rosin Oil, 50 gal bbls, first run .....gal.	.....	.57	.57	.57
.38	.72	.62	.64	Second run.....gal.	.....	.62	.62	.62
4.37½	13.00	8.50	10.08½	Rosins, 600 lb bbls 280 lb...unit B.....	.....	9.30	9.75	8.20
4.42½	13.00	8.50	10.17	D.....	.....	9.35	9.80	8.25
4.42½	13.15	8.50	10.23	E.....	.....	9.35	9.95	8.60
4.47½	13.20	8.50	10.49	F.....	.....	9.38	10.10	8.65
4.47½	13.25	8.50	10.58½	G.....	.....	9.38	10.10	8.75
4.47½	13.30	8.50	10.65	H.....	.....	9.40	10.10	8.75
4.55	13.35	8.55	10.79½	I.....	.....	9.40	10.15	8.80
4.49½	14.80	8.65	11.05	K.....	.....	9.50	10.15	8.85
5.47½	15.00	8.80	11.15½	M.....	.....	9.60	10.30	8.85
6.12½	15.85	9.15	11.62	N.....	.....	9.85	11.00	9.15
6.67½	16.60	10.50	12.58	WG.....	.....	10.85	11.65	10.15
6.92½	18.55	12 00	14.34	WW.....	.....	11.50	12.65	10.40
.....	24.00	24.00	24.00	Rotten Stone, bags mines....ton	24.00	30.00	30.00	24.00
.....	.07	.07	.07	Lump, imported, bbls. ....lb.	.07	.08	.08	.07
.05½	.09	.09	.09	Selected bbls.....lb.	.09	.12	.12	.09
.02½	.02	.02	.02	Powdered, bbls.....lb.	.02	.05	.05	.02
.02½	.04½	.04½	.04½	Sago Flour, 150 lb bags.....lb.	.04½	.05	.05	.04½
.60	.90	.90	.90	Sal Soda, bbls wks.....100 lb.	.....	.....	.....	.....
11.00	19.00	19.00	19.00	Salt Cake, 94-96% c-1 wks...ton	19.00	20.00	20.00	19.00
8.00	15.00	15.00	15.00	White, 87% wks.....ton	15.00	17.00	17.00	15.00
.04½	.06½	.06½	.06½	Saltpetre, double refd granular 450-500 lb bbls.....lb.	.06½	.06½	.06½	.06½
.....	.01½	.01½	.01½	Satin, White, 500 lb bbls.....lb.	.....	.01½	.01½	.01½
.18½	.66	.47	.57	Shellac Bone dry bbls.....lb.	.....	.58½	.62½	.49
.15	.57	.41	.48	Garnet, bags.....lb.	.....	.45	.55	.45
.14½	.65	.40	.52½	Superfine, bags.....lb.	.....	.48	.58	47
.15½	.37	.57	.49	T. N. bags.....lb.	.....	.45	.55	.42
1918	.50	.5C	.5C	Schaeffer's Salt, kegs.....lb.	.53	.57	.57	.53

"Distinguished for its high test and uniform quality"

Soda Ash
Caustic Soda
Calcium Chloride
Bicarbonate of Soda

Michigan Alkali Company

General Sales Department: 21 East 40th St., New York City

Chicago Office: 1316 South Canal Street

Works: Wyandotte, Mich.

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1917 71.7c - April 1928 67.8c

has developed a surprising firmness. The schedule of $2.17½ per 100 bs. is being closely adhered to and the market seems quite strong.

Sodium Nitrite — The good sale of September continued throughout October, and though the price is unchanged the market is very well held at the quoted levels.

Solvent Naphtha — Though not in such a firm position as some items in this group the price is well held at 35c gal. for drum lots.

Starch — Lower prices on corn starch have failed to develop, due to the unexpected firming of the grain market. Prices remain as when last quoted.

Tankage — The rather limited production is probably responsible for the fact that prices have advanced during the past month. Quotations are now at $4.75 & 10 per unit in New York, although that figure is nominal; and $5.00 & 10 per unit in Chicago and South American shipments.

Toluol — Is extremely firm at this writing. There has been an advance during the month to 40c gal. as a result of production for six weeks ahead being entirely sold up. The demand is even in excess of this period and prospects for a continued firm market are extemely bright.

Turpentine — Has been characterized by a note of firmness throughout the past month and prices have improved noticeably as a result. Spirits is now quoted at 54½c @ 59½c gal. and steam distilled at 51c gal.

Valonia Beard — Spot stocks have become somewhat more plentiful, and as a result, prices are now lower, quotations being at $64.00 ton.

OILS AND FATS

Chinawood Oil — Although prices are practically at the same level as when last quoted here, faint traces of weakness, which may become more apparent as time goes on, have been discernible in this market during the past month. As is usual about this season of the year, buying on spot has largely shifted from barrels to tank-cars and the latter is quoted at 14¾c lb. in New York. Tanks at the Coast are quoted at 13¾c lb., while barrels, spot, are at 15¼c @ 15½c lb. Another report has come in, this time from New Zealand, regarding prospects of developing a wood oil industry throughout the upper part of that island. Experiments are now being conducted over an area of 2,000 acres in the Helensville District.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	6.00	6.00	6.00	Silica, Crude, bulk mines....ton	8.00	11.00	11.00	8.00
.....	15.00	15.00	15.00	Refined, floated bags.....ton	22.00	30.00	30.00	22.00
.....	32.00	32.00	32.00	Air floated bags.....ton	.....	.....	.....	.....
.....	55.00	55.00	55.00	Extra floated bags.....ton	32.00	40.00	40.00	32.00
10.00	15.00	15.00	15.00	Soapstone, Powdered, bags f.o.b. mines.....ton	15.00	22.00	22.00	15.00
				Soda				
.67½	1.32½	1.32½	1.32½	Soda Ash, 58% dense, bags c-l wks.....100 lb.	.....	1.40	1.40	1.40
.57½	2.14	2.04	2.12	58% light, bags del NY.100 lb.	2.04	2.29	2.29	2.04
.....	1.32½	1.32½	1.32½	Contract, bags c-l wks.100 lb.	.....	1.32½	1.32½	1.32½
2.50	4.16	4.06	4.14½	Soda Caustic, 76% grnd & flake drums del NY.....100 lb.	4.16	4.21	4.21	4.16
.....	3.76	3.66	3.74½	76% solid drs del NY...100 lb.	3.76	3.91	3.91	3.76
.....	3.00	3.00	3.00	Contract, c-l wks.....100 lb.	.....	3.00	3.00	3.00
.03½	.04½	.04½	.04½	Sodium Acetate, crystals, 450 lb bbls wks.....lb.	.04½	.05	.05	.04½
.....	.19	.18	.18½	Arsenate, drums.. .....lb.	.....	.....	.....	.....
.....	1.00	1.00	1.00	Arsenite, drums.....gal.	.....	.....	.....	.....
1.00	2.41	2.41	2.41	Bicarb., 400 lb bbl NY..100 lb.	.....	2.41	2.41	2.41
.04½	.06½	.06½	.06½	Bichromate, 500 lb cks wks.lb.	.07	.07½	.07	.06½
.02½	.08½	.08½	.08½	Bisulfite, 500 lb bbl wks....lb.	.....	.04	.04	.04
.60	1.30	1.30	1.30	Carb. 350 lb bbls NY...100 lb.	1.30	1.35	1.35	1.30
.07½	.06½	.06½	.06½	Chlorate, 112 lb kegs wks...lb	.06½	.07	.06½	.05½
.....	12.00	12.00	12.00	Chloride, technica!.....ton	12.00	13.00	13.00	12.00
.22	.20	.20	.20	Cyanide, 96-98%, 100 & 250 lb drums wks.....lb.	.....	.20	.20	.20
1918	.08½	.08½	.08½	Fluoride, 300 lb bbls wks...lb.	.08½	.09	.09	.08½
.....	.22	.22	.22	Hydrosulfite, 200 lb bbls f.o.b. wks.....lb.	.22	.24	.24	.22
.....	.05	.05	.05	Hypochloride solution, 100 lb cbys.....lb.	.....	.05	.05	.05
1.40	2.65	2.65	2.65	Hyposulfite, tech, pea crys 375 lb bbls wks....100 lb.	2.65	3.05	3.05	2.65
1.30	2.40	2.40	2.40	Technical, regular crystals 375 lb bbls wks... 100 lb.	2.40	2.65	2.65	2.40
.....	.70	.45	.62	Metanilate, 150 lb bbls.....lb.	.....	.45	.45	.45
.....	.02½	.02½	.02½	Monohydrate, bbls.....lb.	.....	.....	.....	.....
1918	.55	.55	.55	Naphthionate, 300 lb bbl...lb.	.55	.57	.57	.55
2.12½	2.67	2.25	2.52½	Nitrate, 92%, crude, 200 lb bags c-l NY.....100 lb.	.....	2.17½	2.45	2.12½
.05½	.08½	.08	.08	Nitrite, 500 lb bbls spot...lb.	.07½	.08	.08½	.07½
.....	.25	.25	.25	Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb	.25	.27	.27	.25
.....	.20	.20	.20	Oxalate Neut, 100 lb kegs..lb.	.20	.23	.23	.20
.....	3.90	3.90	3.90	Paratoluene, tri-sodium, tech. 100 lb bbls c-l....100 lb.	.....	3.90	3.90	3.90
.....	.08	.08	.08	Sulfonate, 175 lb bbls....lb.	.08	.09	.09	.08
.19	.21	.21	.21	Perborate, 275 lb bbls.....lb.	.21	.22	.22	.21
2.12½	3.25	3.25	3.25	Phosphate, di-sodium, tech. 550 lb bbls.....100 lb.	3.25	3.55	3.55	3.25
.....	.69	.69	.69	Picramate, 100 lb kegs.....lb.	.69	.72	.72	.69
.08½	.12	.11	.12	Prussiate, Yellow, 350 lb bbl wks.....lb.	.12	.12½	.12½	.12
.....	.13½	.13½	.13½	Pyrophosphate, 100 lb keg..lb.	.13½	.14	.14	.13½
.02	1.20	1.20	1.20	Silicate, 40 deg clear 55 gal drs wks.....100 lb.	1.20	1.45	1.45	1.20
.02	.85	.85	.85	40 deg turbid 55 gal drs wks.....100 lb.	.85	1.10	1.10	.85
.....	.04½	.04½	.04½	Silicofluoride, 450 lb bbls NY .....lb.	.05	.05½	.05	.05
.....	.48½	.48½	.48½	Stannate, 100 lb drums.....lb.	.48½	.49	.49	.48½
.....	.20	.20	.20	Stearate, bbls.....lb.	.18	.22	.29	.18
.....	.16	.16	.16	Sulfanilate, 400 lb bbls.....lb.	.16	.18	.18	.16
.....	.02½	.02½	.02½	Sulfate Anhyd., 550 lb bbls c-l wks.....lb.	.02½	.02½	.02½	.02½
.01½	.02½	.02½	.02½	Sulfide, 30% crystals, 440 lb bbls wks.....lb.	.02½	.02½	.02½	.02½
.....	.03½	.03½	.03½	62% solid, 650 lb drums 1c-1 wks.....lb.	.03½	.04	.04	.03½
.02½	.03½	.03½	.03½	Sulfite, crystals, 400 lb bbls wks.....lb.	.03½	.03½	.03½	.03½
.....	.40	.40	.40	Sulfocyanide, bbls.....lb.	.40	.50	.50	.40
.....	.85	.80	.82½	Tungstate, tech, crystals, kegs .....lb.	.80	.85	.85	.80
1917	.40	.35	.37	Solvent Naphtha, 110 gal drs wks.....gal.	.35	.40	.40	.35
1918	.01½	.01½	.01½	Spruce, 25% liquid, bbls.....lb.	.....	.01½	.01½	.01½
1918	.01	.01	.01	25% liquid, tanks wks.....lb.	.....	.01	.01	.01
.....	.02	.02	.02	50% powd., 100 lb bag wks.lb.	.02	.02½	.02½	.02
.....	3.22	3.07	3.14½	Starch, powd., 140 lb bags .....100 lb.	4.07	4.27	4.42	3.07
1.99	3.12	2.97	3.03	Pearl, 140 lb bags.....100 lb.	3.97	4.17	4.32	2.97
.05½	.06	.04½	.05½	Potato, 200 lb bags .....lb	.05½	.06½	.06½	.05½
.05½	.06½	.06½	.06½	Imported bags.....lb	.05½	.06½	.06½	.05½
.05½	.08	.06	.07	Soluble.....lb.	.08	.08½	.08½	.08
.07	.09½	.09	.09½	Rice, 200 lb bbls.....lb.	.09½	.10	.10	.09½
.04½	.06½	.06½	.06½	Wheat, thick bags.....lb.	.06½	.07	.07	.06½
.04½	.09½	.09½	.09½	Thin bags.....lb.	.09½	.10	.10	.09½
1918	.07½	.07½	.07½	Strontium carbonate, 600 lb bbls wks.....lb	.07½	.07½	.07½	.07½
.07½	.08½	.08	.08	Nitrate, 600 lb bbls NY....lb.	.08½	.09	.09	.08½
				Sulfur				
1.85	2.05	.205	2.05	Sulfur Brimstone, broken rock, 250 lb bag c-l.....100 lb.	.....	2.05	2.05	2.05
.....	18.00	18.00	18 00	Crude, f.o.b. mines.... ton	18.00	19.00	19.00	18.00
.....	2.40	2.40	2.40	Flour for dusting 99½%, 100 lb bags c-l NY.....100 lb.	.....	2.40	2.40	2.40
2.00	2.50	2.50	2.50	Heavy bags c-l.....100 lb.	.....	2.50	2.50	2.50
2.20	3.45	3.45	3.45	Flowers, 100%, 155 lb bbls c-l NY.....100 lb.	.....	3.45	3.45	3.45
1.85	2.65	2.65	2.65	Roll, bbls 1c-l NY.....100 lb.	2.65	2.85	2.85	2.65

The Finest Raw Materials

Quality goes through and through in the manufacture of Diamond 58% Soda Ash. The various raw materials are selected for their individual quality with the most meticulous care.

At every important stage of manufacture a corps of expert chemists concentrate their skill and knowledge in safeguarding the quality of Diamond Alkalies. The result is a product which has gained a national reputation for its unvarying purity and uniformity.

DIAMOND ALKALI COMPANY

Pittsburgh, Penna. *and Everywhere*

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Coconut Oil — Although prices are somewhat higher than when last quoted, demand is slight and the market continues easy. Ceylon is now at 9⅜c lb. in barrels and 8¼c lb. in tanks at New York; Cochin is at 9½c lb. in barrels and 8¾c @ 8⅞c lb. in tanks at New York; Manila is at 9¼c lb. in barrels and 8⅛c @ 8¼c lb. in tanks at New York, and 7¾c @ 7⅞c lb. in tanks at the Coast.

Corn Oil — Following the lower position of cottonseed oil during the past month, crude corn oil has also declined and is now quoted at 10½c lb. in barrels at New York, and at 8½c lb. in tanks at the mills.

Cottonseed Oil — The general tendency has been downward in this market during the past month, making quotations 8c lb. for crude, 9.75c lb. for PSY, and 9.80c lb. for futures.

Greases — All grades have advanced about ½c lb. during the past month so that brown is now quoted at 7¾c lb., yellow at 8⅛c @ 8¼c lb., and white at 10½c lb.

Lard Oil — Has advanced ¼c @ ¾c lb. during the past month. Edible is now at 16¼c lb., extra at 13¼c lb., and extra No. 1 at 13c lb. Similar advances have occurred throughout the oils and fats group during the month and all members of the group seem strong.

Linseed Oil — Although the schedule remains the same as that quoted by manufacturers last month with oil in tanks at 9.2c lb., barrels at 10c lb. on spot, and five barrel lots at 10.4c lb., an easier tone had developed during the latter half of the month. Consequently, there has been considerable price shading on firm bids. Quotations have been at two points under schedule on the tank and car lot price and activity increased noticeably at the lower figures.

Menhaden Oil — Offerings have been very light on crude oil and as a result the price has advanced 6c gal. since last reported. Quotations are now at 47c gal. in tanks at Baltimore, and the market seems strong.

Neatsfoot Oil — In common with the other members of the animal group, has advanced steadily during the past month and even yet exhibits an upward trend. Cold-pressed is now quoted at 19c lb., extra at 13¼c lb., and pure at 15¼c lb.

Oleo Oil — Contrary to the general position of the other members of the animal oils and fats group, this market is rather weak. Offerings are liberal and consumers have been showing but little interest. No. 1 is at 12¾c lb., No. 2 at 11¾c lb., and No. 3 at 10¾c lb.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
				Sulfur Chloride, red, 700 lb drs wks. . . . . lb.	.05	.05½	.05	.05
.....	.05	.05	.05	Yellow, 700 lb drs wks. . . . . lb.	.03½	.04½	.04½	.03½
.....	.03¾	.03¼	.03½	Sulfur Dioxide, 150 lb cyl. . . . lb.	.08	.08½	.08½	.08
.....	.08	.08	.08	Extra, dry, 100 lb cyl. . . . . lb.	.17	.19	.19	.17
.....	.17	.17	.17	Sulfuryl Chloride, 600 lb dr. . . lb	.10	.65	.65	.10
.....	.65	.65	.65	Stainless, 600 lb bbls. . . . . lb.	.11	.11½	.11½	.11
.....	.11	.11	.11	Extract, 450 lb bbls. . . . . lb.	.05½	.06	.06	.05½
.....	.05	.05	.05	Sicily Leaves, 100 lb bg. . . ton	.....	130.00	130.00	130.00
.....	130.00	130.00	130.00	Ground shipment. . . . . ton	.....	72.00	72.00	72.00
62.00	80.00	72.00	73.75	Virginia, 150 lb bags. . . . . ton	55.00	60.00	60.00	55.00
40.00	55.00	55.00	55.00	Talc, Crude, 100 lb bgs NY. . ton	12.00	15.00	15.00	12.00
.....	12.00	12.00	12.00	Refined, 100 lb bgs NY. . ton	16.00	18.00	18.00	16.00
15.00	16.00	16.00	16.00	French, 220 lb bags NY. . . ton	30.00	35.00	35.00	30.00
15.00	30.00	30.00	30.00	Refined, white, bags. . . . ton	38.00	45.00	45.00	38.00
.....	38.00	38.00	38.00	Italian, 220 lb bags NY. . . ton	40.00	50.00	50.00	40.00
35.00	40.00	40.00	40.00	Refined, white, bags. . . . ton	50.00	55.00	55.00	50.00
.....	50.00	50.00	50.00	Tankage Ground NY. . . . . unit	.....	4.75&10	5.10&10	4.65&10
3.50	4.85	4.00	4.41	High grade f.o.b. Chicago. unit	.....	5.00&10	4.25&10	3.90&10
3.10	5.25	3.75	4.29	South American cif. . . . . unit	.. ..	5.00&10	5.00&10	4.60&10
.....	5.25	4.00	4.38½	Tapioca Flour, high grade bgs. lb.	.04½	.05	.05	.04½
.02	.04½	.04½	.04½	Medium grade, bags. . . . . lb.	.03½	.04	.04	.03½
.01½	.03½	.03½	.03½	Tar Acid Oil, 15%, drums. . . gal.	.26	.27	.27	.26
.....	.26	.26	.26	25% drums. . . . . gal.	.29	.30	.30	.29
.....	.29	.29	.29	Coke Oven, tanks wks. . . . . lb	.07	.08	.08	.07
.....	.07	.07	.07	Kiln Burnt, bbl. . . . . bbl.	.....	13.50	13.50	13.50
6.50	16.00	13.50	14.87½	Retort, bbls. . . . . bbl.	13.50	15.00	15.00	13.50
6.76	18.50	13.50	15.38½	Terra Alba Amer. No. 1, bags or bbls mills. . . . . 100 lb.	1.15	1.75	1.75	1.15
.75	1.15	1.15	1.15	No. 2 bags or bbls. . . 100 lb.	1.50	2.00	2.00	1.50
.60	1.50	1.50	1.50	Imported bags. . . . . 100 lb.	.02	.02½	.02½	.02
.80	2.00	2.00	2.00	Tetralene, 50 gal drs wks. . . . lb.	.....	.20	.20	.20
.....	.20	.20	.20	Thiocarbanilid, 170 lb bbl. . . . lb.	.22	.24	.24	.22
.....	.22	.22	.22	Tin Bichloride, 50% soln, 100 lb bbls wks. . . . . lb.	.....	.14½	.17½	.14½
.11½	.20½	.17½	.19	Crystals, 500 lb bbls wks. . . lb.	.....	.36½	.41½	.36½
.23	.48	.41½	.45	Metal Straits NY. . . . . lb.	.....	.48	.58	.48
.....	.71½	.58	.65	Oxide, 300 lb bbls wks. . . . . lb.	.....	.53	.75	.53
.36	.75	.70	.71	Tetrachloride, 100 lb drs wks . . . . . lb.	.....	.30½	.35½	.30½
.....	.48	.35½	.39	Titanium Oxide, 200 lb bbl. . lb.	.....	.40	.40	.40
.....	.40	.40	.40	Pigment, bbls wks. . . . . lb.	.13½	.14	.14	.13½
.....	.13½	.13½	.13½	Toluene, 110 gal drs wks. . . . lb.	.....	.45	.45	.40
1918	.40	.40	.40	8000 gal tank cars wks. . . . lb.	.....	.40	.45	.35
.....	.35	.35	.35	Toluidine, 350 lb bbls. . . . . lb.	.90	.94	.94	.90
1918	.90	.90	.90	Mixed, 900 lb drs wks. . . . . lb.	.31	.32	.32	.31
1918	.31	.31	.31	Toner Lithol, red, bbls. . . . . lb.	.85	.90	.90	.85
.....	.85	.85	.85	Para, red, bbls. . . . . lb.	.70	.75	.80	.70
.....	.75	.75	.75	Toluidine. . . . . lb.	1.70	1.75	1.80	1.70
1918	1.75	1.75	1.75	Triacetin, 50 gal drs wks. . . . lb.	3.60	3.90	3.90	3.60
.....	3.60	3.60	3.60	Tricresyl Phosphate, drs. . . . . lb.	.36	.50	.50	.36
.....	.36	.36	.36	Triphenylguanidine. . . . . lb.	.69	.73	.73	.69
.....	.70	.69	.69	Phosphate, drums. . . . . lb.	.70	.75	.75	.70
.....	.70	.70	.70	Tripoli, 500 lb bbls. . . . . 100 lb.	2.50	3.00	3.00	2.50
.....	2.50	2.50	2.50	Turpentine Spirits, bbls. . . . . gal.	.54½	.59½	.64½	.50½
.49	.86	.53½	.65	Wood Steam dist. bbls. . . . gal.	.....	.51	.59	.46
.34	.76	.46	.55	Urea, pure, 112 lb cases. . . . . lb.	.18	.20	.20	.18
.....	.18	.18	.18	Valonia Beard, 42%, tannin bags. . . . . ton	.....	64.00	76.00	66.00
.....	70.00	66.00	61.52	Cups, 30-31% tannin. . . . . ton	.....	Nom.	55.00	55.00
.....	49.50	39.00	43.96	Mixture, bark, bags. . . . . ton	.....	54.00	64.00	54.00
.....	68.00	43.00	48.52	Vermilion, English, kegs. . . . . lb.	2.00	2.10	2.10	1.75
.55	1.95	1.55	1.94½	Wattle Bark, bags. . . . . ton	.....	54.00	76.00	54.00
.....	59.00	49.50	53.71	Extract 55%, double bags ex-dock. . . . . lb.	.....	.06½	.06½	.05½
.....	.05½	.05½	.05½	Whiting, 200 lb bags, c-1 wks . . . . . 100 lb.	.....	1.25	1.25	1.25
.45	1.25	1.25	1.25	Alba, bags c-1 NY. . . . . ton	.....	13.00	13.00	13.00
.....	13.00	13.00	13.00	Gilders, bags c-1 NY. . . 100 lb.	.....	1.35	1.35	1.35
.55	1.35	1.35	1.35	Zinc Ammonium Chloride powd., 400 lb bbls. . . . . lb.	5.25	5.75	.05½	5.85
.....	.06½	.06½	06½	Carbonate Tech, bbls NY. . lb.	.09½	.10	.10	.09½
.08½	.09½	.09½	.09½	Chloride Fused, 600 lb drs. wks. . . . . lb.	.....	.06	.06	.06
.04½	.06	.06	.06	Gran., 500 lb bbls wks. . . . . lb.	.06½	.06½	.06½	.06½
.04½	.06½	.06½	.06½	Soln 50%, tanks wks. . . 100 lb.	.....	3.00	3.00	3.00
.....	3.00	3.00	3.00	Cyanide, 100 lb drums. . . . . lb.	.40	.41	.41	.40
.....	.40	.40	.40	Dust, 500 lb bbls c-1 wks. . . lb.	.....	.09	.09	.09
.05½	.09	.09	.09	Metal, high grade slabs c-1 NY. . . . . 100 lb.	.....	6.45	6.40	6.07½
.....	7.35	6 40	6.66	Oxide, American bags wks. . lb.	.07½	.07½	.07½	.07½
.05½	.07½	07½	.07½	French, 300 lb bbls wks. . lb.	.10½	.12½	.12½	.10½
.06½	.10½	.10½	.10½	Sulfate, 400 bbl wks. . . . . lb.	.03½	.03½	.03½	.03½
.02½	.03½	03	.03½	Sulfide, 500 lb bbls. . . . . lb.	.30	.32	.32	.30
.....	.30	.30	.30	Sulfocarbolate, 100 lb keg. . lb.	.29	.30	.30	.29
.....	.29	.29	.29	Xylene, 10 deg tanks wks. . . . lb.	.....	.32	.32	.32
.....	.38	32	.37	Commercial, tanks wks. . . . lb.	.30	.32	.32	.30
.....	.36	.30	.35	Xylidine, crude. . . . . lb.	.....	.38	.38	.38
1918	.35	.35	.35	Zirconium Oxide, Nat. kegs. . lb.	.02½	.03	.03	.02½
.....	.02½	.02½	.02½	Pure kegs. . . . . lb.	.45	.50	.50	.45
.....	.45	.45	.45	Semi-refined kegs. . . . . lb.	.08	.10	.10	.08
.....	.08½	.08	.08					

Oils and Fats

.08	.14	.13	.13	Castor, No. 1, 400 lb bbls. . . . lb.	.13	.13½	.14½	.13
.08	.14	.12½	.13½	No. 3, 400 lb bbls. . . . . lb.	.12½	.13	.14	.12½
.....	.18	.17	.18	Blown, 400 lb bbls. . . . . lb.	.14	.15	.17	.14
.06½	.31	.13¾	.19	China Wood, bbls spot NY. . . lb.	.15½	.15½	.17	.14½
.05½	.18	.12½	.16½	Tanks, spot NY. . . . . lb.	.....	.14½	.14½	.14½
				Coast tanks, Sept. . . . . lb	.....	.13½	.14½	.12½
1918	.12	.12	.12	Cocoanut, edible, bbls NY. . . . lb.	.....	.10½	.11½	.10½
.09½	.09½	.09	.09	Ceylon, 375 lb bbls NY. . . . lb.	.....	.09½	.10	.09½
.08½	.08½	.08	.08½	8000 gal tanks NY. . . . . lb.	.....	.08½	.09	.08½
.10½	.10½	.09½	.10	Cochin, 375 lb bbls NY. . . . lb.	.....	.09½	.10½	.09½

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AFTER ALL, it's the big league pitcher who shows the greatest speed—the most "stuff" on the ball—the best controlled delivery.

Our pennant organization, with all its resources and team-work, has won recognition and success by *delivering the goods*. No fiddling around. No stalling. No balking. *Speed*—with plenty on the ball in the way of uniform high quality.

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110 *East* 42*nd Street* *New York, N. Y.*

Sole Manufacturers of PYRO—the standard anti-freeze

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Olive Oil — Offerings of foots for the remainder of the year continue very scarce with prices entirely nominal at 10½c @ 10⅝c lb. Futures are firm and quoted at 9⅝c @ 9¾c lb. for shipment for first half of next year. Inquiry for all positions, however, has been dull.

Palm Oil — Both grades have become very scarce during the past month and as a result, prices have advanced considerably. Lagos is now quoted at 9¼c lb. and Niger at 8⅝c lb., thus marking new highs for the year for both. Although activity has slackened somewhat of late, these prices have remained firm. According to a report to the Department of Commerce, marked progress is being made in the development of oil palm plantations in British Malaya. In 1927, they produced 915 tons of palm oil as compared with 751 tons in 1926, and it is expected that 1928 will show a considerable increase in production.

Perilla Oil — Has become extremely scarce with the result that it has moved into a new high for the year with tanks at the Coast at 15½c lb. and barrels at 20c @ 21c lb.

Rapeseed Oil — Both blown and English have declined somewhat so that the former is now at $1.03 @ $1.04 gal. and the latter at 83c @ 84c gal. Japanese has remained steady and is quoted at 82c @ 83c lb.

Salmon Oil — As supplies have become available, offerings have been made at 42c @ 44c gal. in tanks at the Coast.

Sardine Oil — Quotations are now at 47c gal. in tanks at the Coast.

Soy Bean Oil — Has been very quiet during the past month and the only price change has been on tanks at New York, which are now quoted at 10⅜c lb.

Stearic Acid — The market has grown increasingly strong during the past month due to active demand and high cost of raw materials. Double-pressed distilled is now at 18c @ 18½c lb., double-pressed saponified at 18½c @ 19c lb., and triple-pressed distilled at 20c @ 20½c lb. This not only sets a new high for the year, but also marks higher prices than have existed at any time since the War.

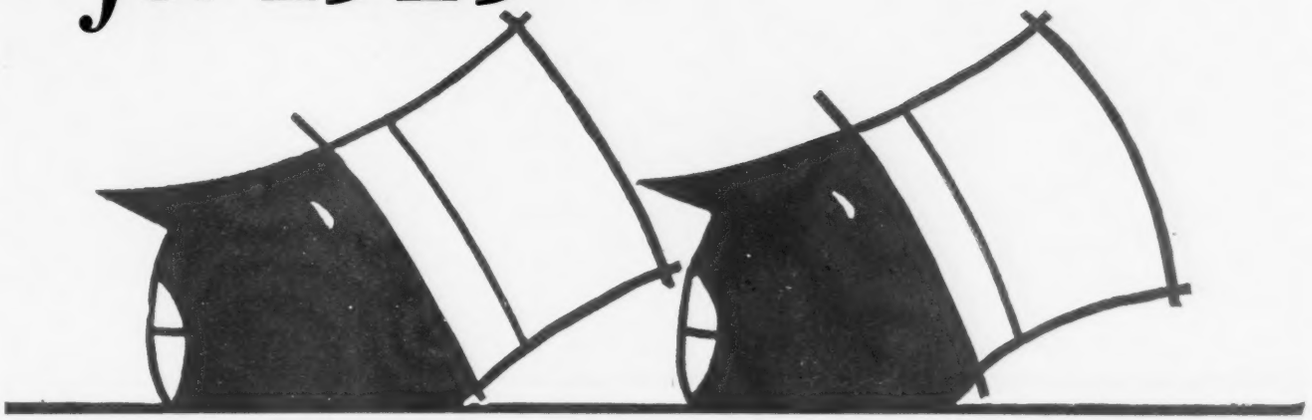
Stearine Oleo — Has declined during the past month and is now quoted at 11c @ 11¼c lb.

Tallow — Extra has advanced considerably during the past month and is now quoted at 9¼c lb. Edible is also higher at 10½c lb.

Tallow Oil — Has advanced ¼c lb. since last quoted, and is now at 11c lb. in tanks and 12c lb. in barrels.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.05½	.10	.08½	.09½	Tanks NY.....lb.	.08½	.08½	.09½	.08½
.....	.09½	.08½	.09½	Manila, bbls NY.....lb.	.....	.09½	.10	.08½
.....	.08½	.08½	.08⅝	Tanks NY.....lb.	.08½	.08½	.08½	.08
.....	.08½	.08	.08½	Tanks, Pacific Coast.....lb.	.07½	.07½	.08½	.07½
				Cod, Newfoundland, 50 gal bbls				
.36½	.66	.63	.64½	.....gal.	.63	.64	.69	.63
.36½	.59	.59	.59	Tanks NY.....lb	.....	.60	.63	.60
				Cod Liver see Chemicals.....				
1918	.06	.06	.06	Copra, bags.....lb.	.....	.05½	.06½	.05½
.06½	.11	.07	.10	Corn, crude, bbls NY.....lb.	.....	.10½	.11	.10
.06½	.09½	.07	.08½	Tanks, mills.....lb.	.....	.08½	.10	.08½
1916	.14	.10½	.12	Refined, 375 lb bbls NY....lb.	.....	.11½	.12½	.11½
1916	.12	.11	.11	Tanks.....lb.	.....	.10½	.11½	.10½
.06	.09½	.06½	.08	Cottonseed, crude, mill.....lb.	.....	.08	.09½	.07½
.07½	.11½	.08 1/5	.10	PSY, 100 lb bbls spot.....lb.	.....	.0975	10.65	.09½
				Nov.—Jan.....lb.	.....	.0980	10.75	.09½
				Degras, American, 50 gal bbls				
.02½	.04½	.04½	.04½	NY.....lb.	.04½	.05	.05	.04½
.03½	.04½	do	do	English, brown, bbls NY...lb.	.....	.05½	.05½	.04½
.03½	.05½	.05½	.05½	Light, bbls NY.....lb.	.....	.05½	.05½	.05½
.04½	.07½	.06	.06⅜	Greases, Brown.....lb.	.....	.07½	.07½	.07
.05½	.08	.06½	.07½	Yellow.....lb.	.08½	.08½	.08	07
.06½	.10½	.08½	.09⅜	White, choice bbls NY,....lb.	.....	.10½	.10½	.09½
.....	.....	.....	.....	Herring, Coast, Tanks.....gal.	.....	Nom.	.42½	.40
.009	.09½	.09	.09⅛	Horse, bbls.....lb.	.09½	Nom.	Nom.	.09½
.13	.16½	.14½	.15½	Lard Oil, edible, prime.....lb.	.....	.16½	.16½	.15½
.....	.13½	.10½	.12	Extra, bbls.....lb.	.....	.13½	.13½	.12
.09	.12½	.10⅛	.11½	Extra No. 1, bbls.....lb.	.....	.13	.13	.11
.078	.11 4/5	.10 2/5	.11	Linseed, Raw, five bbl lots....lb.	.....	.104	10.8	10.0
.077	.11 9-10	.09 6-10	.10⅛	Bbls c-l spot.....lb.	.....	.10	10.4	9.6
.076	.10½	.09	.09 7-12	Tanks.....lb.	.....	.092	9.6	8.8
.....	.09½	.09½	.09½	Lumbang, Coast.....lb.	.....	.09½	.09½	.09½
.33½	.47½	.44	.46⅜	Menhaden Tanks, Baltimore.gal.	.....	.47	.47	.40
.....	.90	.10	.36⅜	Blown, bbls NY.....lb.	.....	.09	.09	.09
.43	.70	.67	.68½	Extra, bleached, bbls NY. gal.	.....	.70	.70	.67
.39	.66	.63	.62	Light, pressed, bbls NY....gal.	.63	.64	.64	.63
.37	.66	.69	.67½	Yellow, pressed, bbls NY gal.	.66	.67	.67	.66
				Mineral Oil, white, 50 gal bbls				
				.....gal.	.40	.60	.60	.40
				Russian, gal.....gal.	.95	1.00	1.00	.95
.14	.18½	.14½	.17½	Neatsfoot, CT, 20° bbls NY..lb.	.....	.19	.19	.18½
.....	.13½	.10½	.12	Extra, bbls NY.....lb.	.....	.13½	.13½	.12
.....	.16½	.12½	.14½	Pure, bbls NY.....lb.	.....	.15½	.16½	.15½
.08	.18½	.10	.13½	Oleo, No. 1, bbls NY.....lb.	.....	.12½	.17½	.12½
.07½	.17	.08½	.12	No. 2, bbls NY.....lb.	.....	.11½	.15½	.11½
.07½	.14	.08½	.10½	No. 3, bbls NY.....lb.	.....	.10½	.14	.10½
.83	1.75	1.40	1.48½	Olive, denatured, bbls NY...gal.	1.30	1.35	1.40	1.18
1918	2.00	2.45	2.15	Edible, bbls NY.....gal.	1.95	2.00	2.00	1.75
.07½	.10½	.08½	.09⅛	Foots, bbls NY.....lb.	.10½	.10½	.10½	.09½
.08½	.09½	.09	.09½	Palm, Kernel, Casks.....lb.	.08½	.08½	.09½	.08½
.07	.08½	.07½	.08	Lagos, 1500 lb casks.....lb.	.....	.09½	.09½	.07½
.....	.08½	.07½	.07½	Niger, Casks.....lb.	.....	.08½	.08½	.07
.....	.14½	.12	.12	Peanut, crude, bbls NY.....lb.	.12	.12½	.12½	.12
.....	.15½	.14½	.15	Refined, bbls NY.....lb.	.14½	.15	.17	.14½
.....	.16½	.12½	.14	Perilla, bbls NY.....lb.	.20	.21	.21	.13
.....	.14½	.10	.12	Tanks, Coast.....lb.	.....	.15½	.15½	.10½
.....	1.70	1.70	1.70	Poppyseed, bbls NY.....gal.	1.70	1.75	1.75	1.70
.63	1.05	1.00	1.01	Rapeseed, blown, bbls NY...gal.	1.03	1.04	1.06	1.01
.....	.90	.82	.87	English, drms.NY.....gal.	.83	.84	.92	.83
.....	.85	.76	.80⅝	Japanese, drms.NY.....gal.	.82	.83	.90	.81
.06½	.10	.09	.09	Red, Distilled, bbls.....lb.	.09½	.10½	.10½	.09½
.....	.09½	.08½	.08⅜	Tanks.....lb.	.....	.09	.09½	.08
.....	.50	.50	.50	Salmon, Coast, 8000 gal tks..gal.	.42	.44	.50	.42
.....	.47	.43	.45	Sardine, Pacific Coast tks....gal.	.....	.47	.47	.41
.08½	.13	.11½	.12½	Sesame, edible, yellow, dos....lb.	.12	.12½	.13½	.12
.....	.14	.14	.14	White, dos.....lb.	.12½	.13	.15	.12½
.34	.40	.40	.40	Sod, bbls NY.....gal.	.....	.40	.40	.40½
.....	.09½	.09½	.09½	Soy Bean, crude.....				
.06½	.....	.....	.....	Pacific Coast, tanks.....lb.	.....	.09½	.09½	.09
.....	.12½	.10½	.12	Soy Bean, crude, bbls NY....lb.	.12½	.12½	.12½	.12
.....	.11	.10½	.10½	Tanks NY.....lb.	.....	.10½	.10½	.10½
.....	.13	.12	.13	Refined, bbls NY.....lb.	.13½	.13½	.13½	.13½
				Sperm, 38° CT, bleached, bbls				
.70	.85	.84	.84½	NY.....gal.	.84	.85	.85	.84
.68	.82	.79	.80½	45° CT, bleached, bbls NY.gal.	.79	.80	.80	.79
				Stearic Acid, double pressed dist				
1916	.13½	.11½	.12	bags.....lb.	.18	.18½	.18½	.11
				Double pressed saponified bags				
1916	.14	.11½	.12	.....lb.	.18½	.19	.19	.11½
1916	.15½	.13½	.14	Triple, pressed dist bags...lb.	.20	.20½	.20½	.13½
.07½	.13	.08½	.11	Stearine, Oleo, bbls.....lb.	.11	.11½	.12½	.09½
.06	.09	.07½	.08	Tallow, City, extra loose.....lb.	.....	.09½	.09½	.08½
.07	.11	.08½	.10	Edible, tierces .....lb.	.....	.10½	.10½	.09½
.09	.10½	.08½	.10	Tallow Oil, Bbls, c-1 NY...lb.	.....	.12	.12	.11½
.09½	.12½	.10	.11	Acidless, tanks NY.....lb.	.....	.11	.11	.10½
.....	.08½	.07½	.07½	Vegetable, Coast mats.....lb.	.08	Nom.	Nom.	.08
.04½	.11	.11	.11	Turkey Red, single bbls.....lb.	.11	.12	.1	
.05½	.14	.14	.14	Double, bbls.....lb.	.14	.16	.1C	.14
				Whale, bleached winter, bbls				
.50	.78	.78	.78	NY.....gal.	.78	.80	.80	.78
.52	.80	.80	.80	Extra, bleached, bbls NY..gal.	.80	.82	.82	.80
.48	.76	.76	.76	Nat, winter, bbls NY.....gal.	.76	.78	.78	.76

--for 1929



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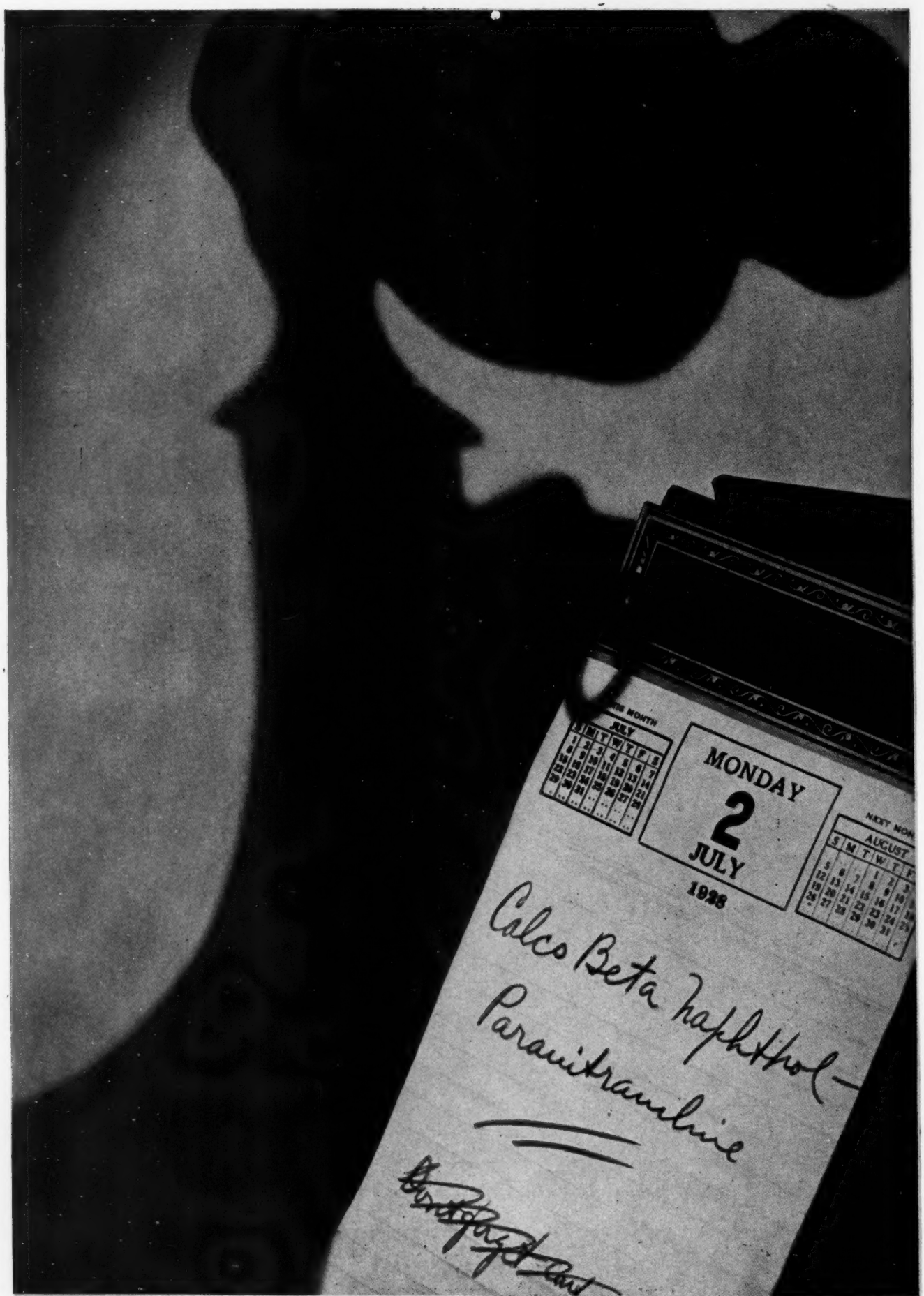


The Calco Chemical Company • Bound Brook, New Jersey •• New York, N. Y. • Telephone Cortlandt 0225

Experiments With Wage Incentive Systems *In a Chemical Plant*

By Gaston DuBois

Technical Director, Monsanto Chemical Works

Many industrial organizations have been forced to adopt some form of incentive measure, due to the low labor efficiency and waste which were prevalent in many departments. Mr. Dubois tells of the work done along these lines by the Monsanto Co.

FACTORY personnel in a chemical plant may be divided into three classes: Process labor, or men engaged in manufacturing operations, maintenance and construction labor and miscellaneous service department labor, i. e., men operating in service departments other than in the maintenance and construction departments (This group includes boiler room and engine room).

The above personnel groups are listed in the order of their importance as gauged by the number of men employed in each group. Our experience has been that barring unusual new construction activities, the above groups are proportioned about as follows: Operating, 45 to 55% of total force, mechanical, 25 to 35% of total force and service departments 20 to 25% of total force.

In many chemical plants there is a certain relationship between the activities of the research department and the number of men employed in the mechanical department. An organization with a large research staff is apt to create more work for the mechanical department owing to more frequent changes and improvements in processes and inversely, an organization engaging in little or no research work, should operate its plant with a minimum number of mechanics. In other words, a research staff is a trouble maker but one which we in the chemical industry must not only put up with, but must encourage. These remarks are necessary, to explain why in many plants there is always a rather unusual amount of new construction going on and if we assume that one-fourth of the mechanical labor is engaged in **new** construction and three-fourths in repairs and maintenance, then we would consider as normal, the following ratio of men working in the three above mentioned groups: Process labor 50%, Mechanical Labor 28% and Miscellaneous Service Departments 22%. These figures have been found to be fairly constant in three different plants, two of which are located in the United States and one abroad.

Following the War years, characterized by exceedingly low labor efficiency, we were faced with the necessity of improving conditions and after applying various corrective measures which seemed indicated, we finally came to a consideration of the use of an incentive plan. Our first impulse was to endeavor to apply such a system to the mechanical department because we realized that while we were able to accurately measure the work performed in our manufacturing departments, we possessed no measuring rod to gauge the work done by mechanics and particularly by those engaged in maintenance and repairs. After consulting outside industrial engineers, we were surprised to find that they were rather disinclined to start applying their system in what seemed to us to be the most fruitful field for improved efficiency, but instead, suggested that we start in some of our service departments which we believed were rather efficiently managed.

At the suggestion of the Haynes Corporation of Chicago, the Manit System was introduced in the operation of our Packing and Warehousing Department. Several hundred time studies were made in remarkably short time, covering operations in the Packing Department in which finished goods are filled into containers ranging from barrels, down to ounce cans. As a result, the labor was cut down to 55% of that required before the application of the Manit System and this system was applied without creating any disturbance and resulting in considerable savings and at the same time the employees were able to materially increase their earnings.

The application of the Manit System in our Warehouse Department was even more satisfactory and those of our staff who were in touch with this work and who, as so frequently happens, were somewhat skeptical at the start, became really enthusiastic supporters of our endeavors to introduce modern efficiency methods in plant operations.

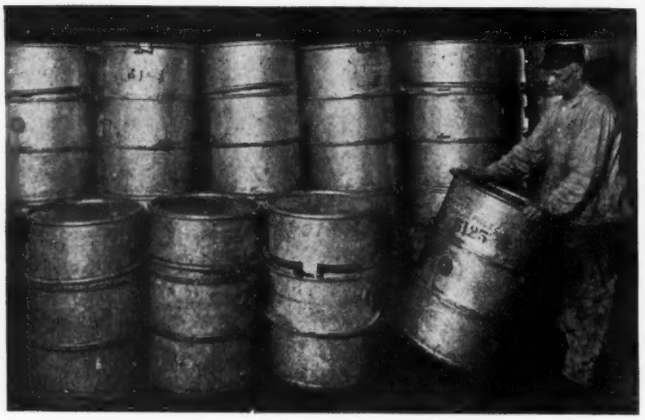
The application of an incentive system in some of our service departments had a marked indirect influence on the labor efficiency in the manufacturing departments and the chemists in charge of these departments began to think in terms of labor efficiency to a greater extent than formerly.

An attempt to introduce an incentive system in our Manufacturing Departments, however, was not as generally successful as we had hoped. The obstacles here were numerous. The difficulty in estimating the time devoted by operators to simply watching machines perform, frequent changes in processes or equipment resulting in the necessity of new "time studies", changes in rate of production, three shift operations, all of these factors seem to have to some extent, rendered the results obtained rather inconsistent. In some departments in which we had applied an incentive system, the labor efficiency was greatly improved

How Colgate-Palmolive-Peet

(EDIBLE PRODUCTS DEPARTMENT)

Company Assures the Safe Clean Shipment of Cocoanut Oil *with*



Hackney Removable Head Steel Drums

Colgate-Palmolive-Peet Company's cocoanut oil is an unusual product. It is solid at 70° and liquid at 76°--which means that the containers used for shipping it must be absolutely leak-proof.

And because of the unusual method of emptying them, straight sided drums with full removable heads are used.

The drums are placed in a warm room until the outer surfaces of the cocoanut oil become liquid--then hoisted over a tub and the entire mass slides out. The smooth bottom chime--leak-proof construction—easily removed head--and full unobstructed opening of Hackney Steel Drums make them ideal for this service. And the sturdy, long life construction, greatly reduces shipping costs.

Investigate the adaptability of Hackney containers for shipping your products. It may mean lower costs and improved service for *you*.

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Hackney
MILWAUKEE

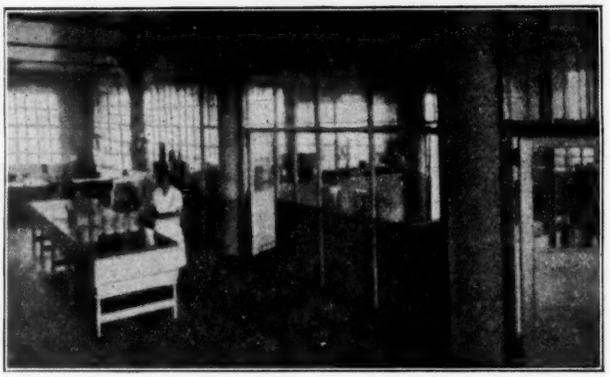
apparently for reasons other than a desire on the part of the operator to perform efficiently and in other cases a low labor efficiency resulted through no fault of the operators or of their supervisors and it became very apparent that the system was either improperly applied or that the system would not fit the case.

Wherever possible, bonuses for labor are payed weekly, but owing to the above mentioned inconsistencies we changed our operating bonus system to one in which the labor efficiency is computed monthly and results, therefore, tie up with our monthly

Airplane view of the Monsanto Chemical Works plant at East St. Louis, Mo.

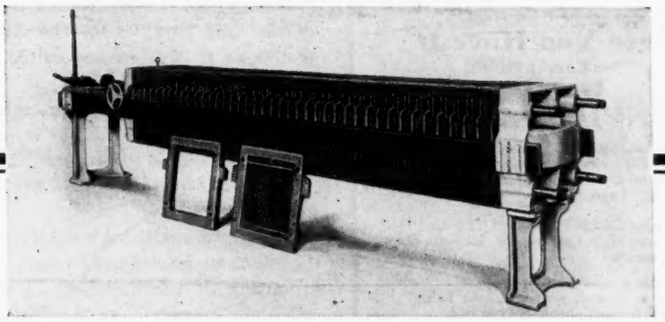
cost calculations. We also established normal "process yields" which had to be attained before any labor bonus would be paid. This system, based on standard labor and yields, has now been in use for over one year and is fairly satisfactory.

The problem in the mechanical department turned out to be more difficult. An attempt to establish standards, based on labor costs of repairs and maintenance covering the previous six years, showed that the costs varied considerably from year to year and



Section of Packaging Department at the Monsanto plant.

naturally the repairs in any one department varied even still more from month to month, so that monthly costs could never be used as a basis for measuring the efficiency of the maintenance department. We finally solved the problem in a manner which appears to be fairly satisfactory. We divided our mechanics into groups, such as carpenters, pipefitters, etc., and an inspector was appointed whose only duty is to estimate the time required by each group to carry out work assigned to its members. These estimates are combined over a period of a week and the totals for each group are compared with the actual time put in. If less than the estimated time has been consumed, the saving reduced to dollars and cents, is divided equally between workers and company. The inspector may make his estimates before the job is started, during its progress or after its completion, but naturally he is never informed of the actual time required so as not to influence his estimates. Frequently, as for instance, if a piece of



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ABSOLUTELY PURE

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110 gallons—14 gauge Shell
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1-Bar Rolling Hoops

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Graduated Table, Handle Adjustable to two positions, Rapid Stroke and Other Features. Cuts ⅛" and ¼" Letters.

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machinery is to be overhauled, it is preferable to make an estimate of the time required for the job after the work has been completed, as it is often impossible to foresee exactly what repairs will have to be made.

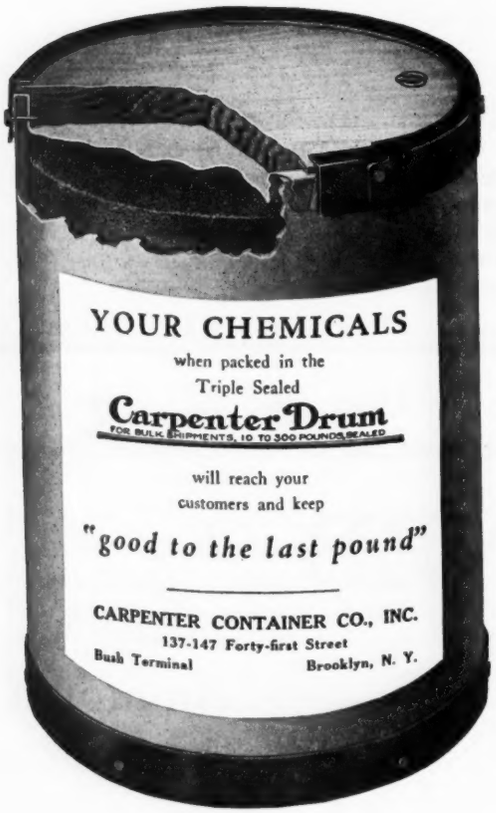
The inspector also estimates the time spent by mechanics on new construction as well as on repairs. One inspector assisted by a clerk, is able to estimate the work of about 150 mechanics.

The bonus for this class of workers is a group bonus and is paid weekly.

This system, although subject to many objections, has, nevertheless, some merits and while it did not at first sight appear very promising, it has undoubtedly greatly reduced the amount of lost time inasmuch as the foremen share in the bonus. The mechanics themselves are interested in seeing that no time is lost between jobs. As experience is accumulated, it is found that there is, even in repair work, a fairly large percentage of repetitive work which can be rapidly and accurately estimated.

Conclusion

Of the three incentive systems introduced in our plant, one only, the Haynes Manit System, which was used in our Packing and Warehousing Departments, can be considered as completely satisfactory for those departments. The application of incentive systems in our manufacturing and mechanical departments is considerably more difficult and while we have met with some success in working out a fairly satisfactory system, the problem is far from being solved. Research in this direction is just as promising and necessary as the kind of research we carry out in our laboratories.



Construction Notes

Fraser Companies, Ltd., New Brunswick, begins construction of new bleached sulfide pulp mill at Athol, N. B., estimated to cost over $2,500,000. Mill will have capacity of 150 tons per day and will consume about 100,000 cords of pulp wood annually.

Albego Chemical Corporation, St. Louis, Mo., recently organized with capital of $225,000 to manufacture chemicals, chemical compounds, etc., is said to be arranging for early operation of local factory.

Franklin Ink Corp., Philadelphia, Pa., recently organized by William C. Wetherill, and associates is reported to be arranging for early operation of local factory for manufacture of printing inks, etc.

Kingsland Chemical Co., Lyndhurst, N. J., is said to have approved plans for rebuilding of portion of plant recently destroyed by fire with loss reported at close to $13,000.

Cassell Oil & Chemical Co., Milwaukee, recently organized by E. M. Cassell and associates, is said to be planning early operation of local plant.

Logansport Oxygen Co., Logansport, Ind., is said to be planning operation of local plant for production of industrial oxygen.

Morton Salt Co., Chicago, is having plans drawn for new addition reported to cost about $75,000.

Century Carbon Co., owned by Wishnick-Tumpeer, Inc., purchases the natural gas holdings of the Consumers' Gas Co. of Louisiana which supplies the gas requirements of the Century Company. Carbon black produced is sold under trade name of "Witco."

W. W. Evans, chemical engineer, R. T. Vanderbilt Co., New York, resigns to become director of research. Ludlow Manufacturing Association, Boston.

Chromic Acid

For new method of plating
Will not tarnish or corrode
Requires *no* polishing

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1150 Broadway, New York

Fire Prevention Pays Dividends

(*Continued from page 484*)

amount, usually called the "lower explosive limit." Furthermore, for flammable compounds containing carbon and hydrogen or compounds containing carbon, hydrogen and oxygen, the quantity of heat produced by any given volume of vapor air mixture at the lower explosive limit is approximately the same. An instrument was devised consisting essentially of a heating coil, flash-back arrester and thermocouple so adjusted that the percentage of explosive mixture present in an oven would register on a millivolt meter. This instrument which is known as the F-M Continuous Flammable Vapor Indicator is now available in the market. It is suitable for checking explosive conditions involving practically all solvents and thinners known to be used for paint, japan, lacquer, varnish, Bakelite varnish, shellac, impregnating compounds for electrical insulation or brake lining, etc., and by special calibration for hydrogen, carbon monoxide, etc. To date it is not recommended for compounds containing large amounts of constituents such as hydrogen sulfide, carbon disulfide, chlorine, ethylene dichloride, chloroform, methyl chloride, etc., which are either corrosive or become so on combustion. The instrument which has only been available for a few months will undoubtedly be improved and other types developed to safe-guard processes involving all explosive vapors.

Manufacturers are beginning to appreciate that they can look to the insurance companies for assistance in avoiding fires as well as for reimbursement of losses. In increasing numbers they are submitting their problems to the engineering staffs maintained by the insurance companies. That they are well served is shown by the fact that the inspection department maintained by one group of mutual companies specializing in mill insurance, spends more than one million dollars each year to assist the plants in preventing fires. This service includes quarterly inspections of the properties, other inspections for special purposes, the services of specialists in building construction, tank towers, pumps, public water supplies, fire protection and sprinkler layouts, double check valves, etc., the use of a complete laboratory for investigation of unusual hazards, examination and tests of fire protective and electrical equipment, and many other features. The purpose is to furnish complete service in all matters pertaining to lessening fire loss among the mills in particular, and the country in general.

Usually the service is furnished free of charge, being included in the cost of the insurance. The service is also free to all other manufacturers who are seeking to materially reduce the fire hazards in their properties, and obtain relief from their present high insurance rates.

To illustrate the dividends paid by fire prevention, the following facts are furnished. In 1927 the fire

DU PONT
REG. U. S. PAT. OFF.

NOW—American-Made Nitro-Filters

E. I. du Pont de Nemours & Company, Inc.

announce

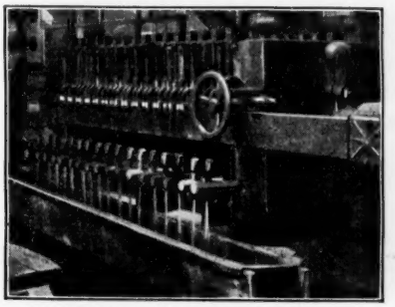
RESISTO-FILTERS

Superior Acid Filtration Cloths that Outlast Wool and Hair Cloths. Non-Clogging. Uniform Filtration.

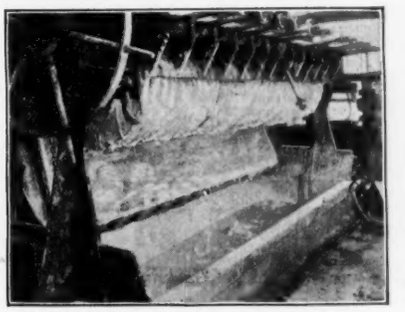
DU PONT chemical engineers have devised a process of nitrating cotton cloth and given America its first domestic nitro-filters. "Du Pont Resisto-Filters" have about the same thickness and texture as ordinary cotton filtration cloths but have a harder surface from which the press cake is easily and quickly detached.

Non-Clogging: Wool or camel's hair cloths, which Resisto-Filters replace, have a tendency to felt and fill up with solids. The press cake clings to their hairy surfaces, making removal difficult. Even after many filtrations, a Du Pont Resisto-Filter will not clog and a uniform rate of filtration is maintained.

Resistance to Corrosion: In their resistance to the corrosive action of sulfuric, nitric and hydrochloric acids or mixtures of those acids, Du Pont Resisto-Filters are far superior to any textile material. Du Pont Resisto-Filters have a life at least twelve times as long as good grade woolen filter cloth and over six times that of camel's hair or the most expensive of the woolen cloths.



165 Filtrations obtained with Resisto-Filters on the above press filtering 20% boiling sulfuric acid.



250 Filtrations obtained with Resisto-Filters on the above lead-lined press filtering 35% sulfuric acid at 35° C.

Uses of Du Pont Resisto-Filters: SULFONATIONS: Simplifies the separation of the solid products from the sulfuric liquors. NITRATIONS: Again Du Pont Resisto-Filters are of great value in removing the solid nitrated products from the spent acid. DRY AND PULP COLORS: In these filtrations Resisto-Filters are most successfully employed.

Size of Du Pont Resisto-Filters: These new filters are not sold in the bolt but are shipped as individual press cloths of suitable size for the press. They are now supplied in two sizes—thirty inch and thirty-six inch and are adapted to the Plate and Frame, Sweetland, American, and other types of filter presses. On special orders of one hundred pieces o more, small size and odd size cloths will be made.

* * *

This coupon will bring you booklet of complete details

Du Pont Resisto-Filters have a tremendous significance for you. This illustrated, concisely written booklet will give you all the facts in just a five-minute reading.

E. I. DU PONT DE NEMOURS & CO., Inc.
Dyestuffs Department, Sales Division
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You may send me a copy of your booklet, "Resisto-Filters for Acid Filtrations."

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AMER SOL

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Bulletin No. 4
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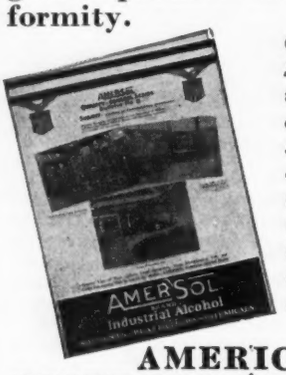

Complete AMER-SOL Quality-Control Bulletins, describing the successive stages of modern alcohol manufacture, will be sent to those who make request on their letterhead.

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(All Formulas)
SOLVENTS - PLASTICIZERS - CHEMICALS

losses of this country amounted to $478,000,000, whereas the total fire insurance in force was estimated at $175,000,000,000, the loss being 27.3 cents per one hundred dollars of insurance. In this same year a group of protected manufacturing plants carrying insurance amounting to $8,700,000,000, experienced fire losses of approximately $1,640,000, equal to 1.9 cents per hundred dollars of insurance. The ratio of 1.9 cents shown by the protected properties compared with the much higher ratio of 27.3 cents for properties of all classes is sufficient evidence that prevention pays.

Nitrate Producers Form Organization

At the meeting of the Nitrate Producers' Association on August 14, postponed from the 9th, it was agreed to form a sales organization separate from the Producers' Association but which for the time being would have the same directorate as the Producers' Association, reports Commercial Attache Ralph H. Ackerman, Santiago, Chile. On the 17th the directors of the selling organization agreed on a scale of prices for sales of nitrate to European and to other markets. The prices to markets other than European or Mediterranean countries were agreed upon as follows, all f. a. s. nitrate ports and per metric quintal:

	s.	*d.*
From August 16 to September 15	16	3
September 16 to September 30	16	3½
October 1 to October 15	16	4
October 16 to October 31	16	4½
November 1 to November 15	16	5
November 16 to November 30	16	5½
December 1 to December 15	16	6
December 16 to December 31	16	6½
January 1, 1929 and thereafter	16	7

According to Commercial Attache Douglas Miller, Berlin, a recent Russian presentation of German-Russian trade places imports of dyestuffs into Russia for the fiscal year 1926-27 at 10,200,000 rubles, or nearly twice the value of present production. Of this total Germany furnished 73 per cent., or imports valued at 7,433,000 rubles. This is a much smaller value than for the year 1913, when imports were valued at 15,000,000 rubles. The German share of the trade was approximately the same proportion of the total in 1926-27 as in 1913, but much smaller in value. (ruble—$0.5146).

According to the "Oil and Colour Trades Journal", London, a five year chemical production program has been planned for the Ukraine, which envisages intensive development of the dye industry, to include production of synthetic indigo and an increase in the varieties of dyes. It also includes plans for synthetic tanning materials and other coal tar specialties. Although the value of coal tar dye production is now only 5,700,000 rubles, the planned expansion calls for a production worth 54,000,000 rubles in the fiscal year 1932-33, or a 940 per cent. expansion.

Commercial Attache William L. Cooper, London, reports that negotiations concerning the formation of an international lead oxide convention covering litharge and red lead have been practically concluded with the organization of the British convention covering these products. It is stated that the International Lead Oxide Convention is similar in character to the White Lead Convention made effective last year.

Chemical Foundation, Inc., New York, publishes "Chemistry in Medicine", a book of 758 pages, edited by Prof. Julius Stieglitz, University of Chicago. Price of the book is $2.

"COLUMBIA BRAND"

Caustic Soda

SOLID—FLAKE
GROUND—LIQUID

Soda Ash

LIGHT—
DENSE

Columbia Chemical Division

Pittsburgh Plate Glass Co., Barberton, Ohio

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Amyl Acetate

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(all grades)

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Magnesium Carbonate

Magnesium Oxide

Quinine Bisulphate

Citric Acid Imports Off Sharply

Import statistics for the first six months of 1928 show that only 892 pounds of citric acid, value $341, were imported for consumption into the United States during that period. That there has been a steady decline in imports during recent years will be seen from the following table:

Imports for Consumption of Citric Acid

Year	*Pounds*	*Value*	*Year*	*Pounds*	*Value*
1923	820,370	$250,845	1926	137,984	$35,944
1924	744,624	206,107	1927	71,291	18,515
1925	687,010	162,473			

There were no imports of citrate of lime during the first six months of 1928 and the amount imported for consumption in 1927 was much less than that during the preceding years, the comparison being shown below:

Imports for Consumption of Lime Citrate

Year	*Pounds*	*Value*	*Year*	*Pounds*	*Value*
1923	1,672,604	$200,143	1926	3,371,409	$339,393
1924	2,505,444	256,807	1927	416,045	46,865
1925	3,430,875	342,532			

Domestic production of citric acid more than doubled in the period 1919-1925. According to the Bureau of the Census, there were produced in 1925, the latest year for which figures are available, 7,598,213, pounds valued at $3,469,740.

Imports of aniline and coal tar dyes into Canada for the three months ending June were as follows: from Britain 35,996 lbs., valued at $23,875; United States 403,670 lbs., valued $227,421; France, 7,697 lbs., valued at $3,482; Germany, 256,873 lbs., valued at $130,184; Switzerland, 75,944 lbs., valued at $50,239; total 780,778 lbs., value $435,438. This compares as follows with imports for the corresponding quarter of 1927; from Britain, 22,794 lbs., valued at $14,984; United States, 342,185 lbs., value $183,121; France, 5,441 lbs., value $3,412; Germany, 142,591 lbs, value $122,847; Switzerland, 64,190 lbs., value $44,244; total 578,466 lbs., value $369,695.

According to a report from Consul General P. S. Heintzleman, Winnipeg, Canadian Industries (Ltd.), Montreal, has authorized for Canadian Explosives (Ltd.), one of its six subsidiary companies, the establishment of a factory at Winnipeg. Canadian Explosives (Ltd.) produce a full line of explosives which are used extensively in mining and railway construction, and in view of the demand for such products in the mines of western Canada the company has decided to erect the new factory.

Although considerably more tartaric acid was imported into the United States during 1927 than in 1926, it is noted that during the first seven months of 1928, there was less brought in than during the corresponding period of the previous year. From January to July, inclusive, 1928, there were entered for consumption 746,328 pounds of tartaric acid, valued at $235,411, while during this same period in 1927, 1,753,595 pounds were entered, having a value of $367,805.

Germany's production of benzol (crude and pure) increased from 19,712 metric tons in 1925 to 31,373 metric tons in 1926, states Trade Commissioner William T. Daugherty, Berlin. Its value in 1926 amounted to 11,060,000 marks (1 mark—$0.2380 United States currency). In this connection it is noted that exports of benzol to Germany from the United States increased from 60,179,632 pounds, value $2,041,839 in 1926 to 89,386,800 pounds in 1927, valued at $3,010,816.

The Holzverkohlungs A. G. of Constance has concluded an agreement with the British Distillers Co. of Edinburgh whereby the two firms will construct a factory in England for acetic acid, acetone, and other wood distillation products. It is reported that an English company will be started for this purpose, reports Consul R. W. Heingartner, Frankfort on the Main, Germany.

Oxalic Acid
Chlorate Soda
Phosphorous Compounds

MANUFACTURED BY
OLDBURY ELECTRO - CHEMICAL CO. NIAGARA FALLS, N. Y.

Chlorate Potash
Persulphate Ammonia

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OXYQUINOLINE SULPHATE

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Powerful, non-toxic antiseptic.

Stronger than Corrosive Sublimate

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German Post War Chemical Exports Believed Equal to Pre-War Volume

Growth of Germany's chemical exports the past several years is believed to have brought them to their former pre-war volume, according to A. H. Swift, Chemical Division, Department of Commerce.

Exports last year exceeded $300,000,000, an increase of about a quarter over the previous year and three-fifths over the year before that. However, 1927 exports include reparations, which account for part of the gain.

Germany's efforts have been concentrated on greater foreign sales of fertilizers and industrial chemical products, which showed the largest increases in 1927. In these two main groups, accounting for more than half of the total chemical exports, improvements were made in such classes as methanol, acetone and formaldehyde, sodium chlorate, sodium sulfates, sodium silicate, cyanides, copper sulfate, iodine (mostly re-exports), magnesium sulfate, ethers of all kinds and tartaric acid in the industrial chemical branch, and crude potash salts (18 to 42 per cent.), potassium sulfate, sodium nitrate, ammonium phosphate and ammonium sulfate, calcium nitrate, and urea in the fertilizer group.

Steady progress also has been made in exports of pyroxylin, which rose from 4,100 tons in 1926 to 6,200 in 1927. The bulk of these sales goes to Europe.

Although the total exports of pigments, paints and varnishes showed an increase, there were several marked decreases in some of the classes, particularly zinc oxide gray, from 12,700 tons to 2,900, and white lead, from 3,300 to 2,900. Prepared paints and lac varnishes and lacquers, on the other hand, recorded decided improvements.

The bulk of Germany's chemical trade is with Europe. In both 1925 and 1926 practically three-fifths of the total German chemical shipments went to Europe and one-fifth to Asia and Oceania, leaving only another fifth to be divided among all the Americas and Africa.

Following Germany's example, the principal French coal mines are developing the utilization of their by-products, with a view to reducing the cost price of coal. Production of synthetic ammonia through the Claude and Casale processes is increasing in France, and 10 mining companies have already started this production, either directly or through branch companies. The present production capacity of synthetic ammonia in France is said to be between 200 and 225 metric tons daily. This production policy has facilitated the preparation of sulfate of ammonia for agricultural uses, 182,000 tons being produced from all sources in 1927, as compared with 77,000 tons in 1913, according to Assistant Commercial Attache D. J. Reagan, Paris.

Interesting experiments for the treatment of coal for by-products are being conducted at the laboratory of the Mines Department, Ottawa. By the processes which are being developed it will be possible almost to completely turn coal into oil by the use of hydrogen. The oil however will be very crude, and will call for extensive refining, which will militate against it being made cheap. Continuous experiments are also being conducted in coking processes and the saving of by-products.

Over 3,000,000 pounds of rayon stocks were held in bonded warehouses August 31, according to the Department of Commerce.

The stocks, with comparative figures for July 31, were as follows: rayon waste, staple fibre, waste not advanced further than silver or roving and yarns made from waste, 159,288 pounds against 165,669 pounds; yarns, threads and filaments, 2,975,942, pounds against 2,948,727 pounds.

Stearine pitch from cotton residue, imported by the P. H. Petry Co., is held dutiable at the rate of 10% ad valorem, under paragraph 1457, act of 1922. The collector's assessment at 20%, under paragraph 1459, is set aside.

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U. S. P. Cresol, High Boiling Tar Acid,
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Recognized for their high quality and uniformity, are offered for prompt shipment by

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A synthetic high boiling nitrocellulose and cellulose acetate solvent of unusual strength and purity.

Ethyl Lactate is widely used for automotive thinners and mist coats, where it promotes unusual flow and gloss. Superior to any other solvent for retarding blushing in humid weather.

Other Aero Brand Products having special application in the lacquer industry are:

ETHYL OXYBUTYRATE
(synthetic high boiling solvent)

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(stabilizer)

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Other Industrial Chemicals supplied by the American Cyanamid Company include:

Anhydrous Ammonia	*Diorthotolylguanidine*
Aqua Ammonia	*Diphenylguanidine*
Ammonium Chloride	*Formic Acid*
Ammonium Phosphate	*Hydrocyanic Acid, Liquid*
Carbonate of Potash	*Red Prussiate of Potash*
Case Hardening Compounds	*Soda Ash*
Caustic Soda	*Sodium Sulphide*
Copper Sulphate	*Sulphur*
Cyanide, Aero Brand	*Sulphocyanides (Thiocyanates)*
Cyanide, Copper	*Thiourea*
Cyanide, Potassium	*Yellow Prussiate of Potash*
Cyanide, Silver	*Yellow Prussiate of Soda*
Cyanide, Sodium	*Zinc Dust*
Cyanide, Zinc	

For full particulars, write or phone Industrial Chemicals Division

AMERICAN CYANAMID COMPANY
535 Fifth Avenue : New York

Japanese Charcoal Industry

Japan produces plenty of charcoal for its local needs but, with the exception of a few plants, primitive earthen ovens are used and no by-products recovered, reports Consul E. R. Dickover, Kobe. The modern plants, which use a destructive distillation method, are located in the vicinity of Kobe. Production varies greatly from year to year but averages less than one-tenth of domestic requirements as is shown by the following table of production and imports: The United States furnished more than 80 per cent. of the total importation.

Year	*Production Pounds*	*Imports from All Countries Pounds*	*Exports from the United States to Japan Pounds*
1923	867,456	16,559,000	15,198,207
1924	2,060,021	19,618,000	18,344,136
1925	1,617,985	21,923,000	16,000,680
1926	.....	18,266,000	15,331,469
1927	.....	14,985,000	.....

Acetate of lime is used principally by the large manufacturers of acetic acid, and acetate of lead, sodium, etc. Imports are usually handled by the large dealers in industrial and pharmaceutical chemicals in Osaka, a list of which may be obtained by application to the Commercial Intelligence Division, Bureau of Foreign and Domestic Commerce.

Continued interest in the subject of low temperature carbonization of coal in Great Britain is indicated by the number of companies being formed to develop and operate various processes in this field. The latest company to be registered is known as Duffield Coal Products (Ltd.), which has been formed with an authorized capital of £300,000 (approximately $1,500,000), for the purpose of acquiring and developing commercially the Duffield processes for the extraction of gas and oil from waste slack coal, together with the rights for a British patent covering the pulverising of coal in connection with the carbonization process. The company is also acquiring an invention known as the "Mastra" coal process for the production of artificial fuel.

A producing unit to make fixed nitrogen by the so-called Mont Cenis (Uhde) low-pressure synthesis is reported about completed at Sodingen in Westphalia, according to Trade Commissioner William T. Daugherty, Berlin. The operation is known as the Gasverarbeitungsgesellschaft m.b.H., and is operated jointly by the Mont-Cenis and Hibernia companies, the latter being controlled by the State. Mont-Cenis is already operating another plant on a small scale. Production is to be sold by the Nitrogen Syndicate.

Production of synthetic ammonia through the Claude and Casale processes is increasing in France, and ten mining companies have already begun this production. The present production capacity of synthetic ammonia in France is said to be between 200 and 225 metric tons daily. This production policy has facilitated the preparation of sulfate of ammonia for agricultural uses, 182,000 tons being produced from sources in 1927, as compared with 77,000 tons in 1913.

Ammonical gas liquor must pay duty at 20% ad valorem, under paragraph 1,459 Act of 1922, according to a decision by the United States Customs Court, overruling a protest of the Canadian Ammonia Co. of Detroit, Claims for a duty at only 10% under paragraph 1,457, as waste, are set aside in an opinion by Judge Young.

American Zinc Institute's honorary foreign correspondent estimates world stocks of zinc October 1 at 68,300 metric tons of 2,204.6 tons each, compared with 65,100 tons September 1, increase of 3,200 metric tons.

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Use of Nitro-Cellulose Lacquers in Belgium Steadily Increased Since '26

The application of nitro-cellulose lacquers for the finishing of automobiles was unknown in Belgium until 1926, but since that year a steady increase has been made in consumption of lacquers. It is estimated that there are approximately 100,000 automobiles operating in Belgium, and although a great majority of the chassis is imported a considerable number of bodies, especially fine bodies, are built in the country. The coach building industry is one of the oldest of Brussels industries and the deluxe bodies manufactured are recognized as among the best in the world. Practically all of the body builders employ nitrocellulose lacquers The Belgian import classifications do not have a separate classification for lacquers, including them with varnish and enamel; hence it is impossible to supply definite figures indicating the import quantity of the commodity.

The following tabulation shows the foreign trade of Belgium in varnish, lacquers and enamel for the first seven months of this year:

	Exports	
	Kilos	*Francs*
Egypt	155,100	933,000
United States	223,300	253,000
France	19,900	300,000
Greece	24,800	164,000
Morocco	20,900	173,000
Portugal	16,100	224,000
Turkey	25,500	212,000
	Imports	
	Kilos	*Francs*
Germany	184,700	4,372,000
United States	126,800	2,327,000
France	192,800	2,454,000
Great Britain	256,500	2,846,000
Netherlands	257,100	3,264,000

A list of body builders in Belgium is on file and may be secured by accredited firms upon application to the Chemical Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

The quantity of tar distilled in Scotland in 1927 was 32 per cent. greater than in 1926, and 93 per cent. more pitch was produced than in the preceding year. The gas works are the most important tar distillers, as shown in the following table of production for 1927:

	Tar Distilled	*Pitch Produced*
	Tons	*Tons*
From gas works	122,922	29,638
iron works	51,910	25,237
coke ovens	17,095	7,949
producer gas and bone works	8,124	5,328
Total 1927	200,051	68,152
1926	153,630	35,394

About 80,000 tons of tar were dehydrated and partially distilled for road purposes.

Tentative terms for the consolidation of the International Nickel Co. and the Mond Nickel Co. have been announced. The terms provide for the payment of $7,500,000 in cash by International Nickel, the issue by International of $18,750,000 of seven per cent. cumulative preferred stock for the three classes of Mond Nickel preferred stock, and the formation of a new holding company which will give six of its shares for each share of Nickel common.

Control of the merged organization, it is believed, will rest in London and Canada. It is expected that the consolidated company will have a Canadian charter. This will take it outside the jurisdiction of the Sherman Anti-Trust Act, as the consolidation would control close to 90 per cent. of the world's nickel production.

Alcohol From Sawdust in India

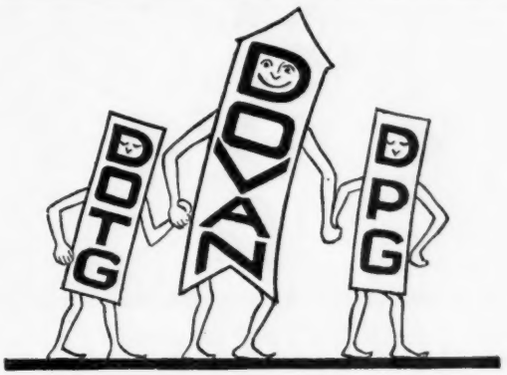
Favorable results are being obtained in India on the experimental production of alcohol from sawdust of the gangwa tree, a fast-growing species according to the Department of Commerce.

The glucose obtained is fermented to alcohol, and it has been roughly calculated that waste sawdust from Calcutta mills alone would yield 375,000 gallons of power alcohol yearly, on the basis of experiments using sulfuric acid. The use of fuming hydrochloric acid would give 40 per cent. greater yields, which would then amount to one-sixth the production in India from all sources. Only 3,000,000 gallons are being produced locally at present.

In the experimental work which is being conducted at the University of Calcutta yields of 30 to 33 per cent. reducing sugar (glucose) have been obtained from sawmill waste by treatment with sulfuric acid; 70 per cent. of this sugar m aterial was fermentable, giving 33 to 39 gallons of 90 per cent. alcohol per ton of air-dried sawdust. The use of fuming hydrochloric acid in the initial hydrolysis gave higher yields of reducing sugar and 48 to 57 gallons of alcohol per ton of sawdust. Special acid-resisting vessels, such as are being manufactured now from synthetic plastics, would be required if hydrochloric acid is used.

Calculations of costs indicate that it will probably pay to develop the method for the production of motor fuel for India even if the sulfate acid method, with its accompanying low yields, is uesd.

National Carbon Co. division of Union Carbide & Carbon Corp., is placing on the market a line of new sunshine ultra violet ray lamps and carbons, which will be sold under the Eveready trademark. A new type of cored carbon has been developed, impregnated with rare earths and minerals with a resulting light, when burned electrically in pairs, that is designated by a federal bureau in Washington as "the closest approximation to natural sunshine."



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Australia Imports Ash From Britain

The importation of soda ash, one of the principal items in Australia's chemical trade, is almost entirely in the hands of two British concerns—The Imperial Chemical Industries (Ltd.), and the British Alkali Co., reports Trade Commissioner Elmer G. Pauly, Melbourne. There is at present little prospect that this product will be manufactured locally. The following table shows the imports of soda ash into Australia for the past three years:

Country of Origin	*1924-25* *Cwts.*	*1925-26* *Cwts.*	*1926-27* *Cwts.*
United Kingdom	461,587	417,471	494,561
British East Africa	.....	3,985	10,004
Union of South Africa	.....	7,089	.....
United States	135	407	8,178
Other countries	62	11	413
Total	461,784	428,963	513,156

The Italian dye industry has not joined the international dyestuffs cartel, according to the Department of Commerce.

The Department was advised July 2 that the Italian dyes and explosives industries had become members of the international dyestuffs cartel and that dyestuffs imports into Italy had been allocated on the basis of 1927 figures, giving Germany 70 per cent., France 20 per cent., and Switzerland 10 per cent. The statement originated from Germany.

A communication has now been received from the Aziende Chimiche Nazionali Associate (A. C. N. A.), Milan, the important dye combination in Italy, stating categorically that the Italian industry has not joined the cartel.

Plans for the construction of a nitrogen plant in the Netherlands are reported to be progressing, according to Consul R. W. Heingartner, Frankfort on the Main, Germany. A Frankfort company, Messer G.m.b.H., has received orders from the Belgian Ammoniaque Synthetique et Derive for nitrogen and hydrogen plants destined for the State mines in Limburg, Netherlands. The plant will be erected on the Maurits mine near Heerlen. It is planned to utilize some 20,000 cubic meters of coke oven gas daily. The plant will work according to a process of the Messer company which is owned by Adolf Messer, a chemical engineer. It will be completed in 1930 and it is planned to gradually increase the output to double the initial capacity.

United States imports of white arsenic reached a peak in 1927 when 12,517 short tons were received from foreign countries, an increase of almost 5,000 tons over 1926 and 2,500 tons higher than the record attained in 1923. Receipts during the first seven months of 1928 have been reported at 7,223 tons, which is 15 per cent. lower than the amount entered during the corresponding period of 1927.

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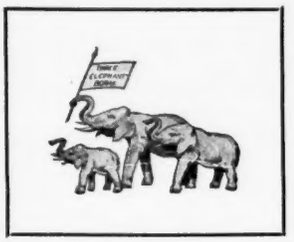

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Germany Wins Polish Nitrogen Suit

The permanent International Court of Justice at the Hague has made public its decision in the German-Polish dispute concerning the Chorzow nitrogen fixation factory. In its complaint dated February 8, 1927, the German Government held that the Polish Government should compensate the two German private firms (the Bavarian Nitrogen Works and the Upper Silesian Nitrogen Works) which were the former owners of the Chorzow works and that the Hague Court should assess the amount of compensation due. By a majority verdict of nine to three the Hague Court holds that the German Government is justified in its demands for compensation. It will later make known its decision as to the exact sum.

During the first seven months of 1928, Germany exported 15,354 metric tons of naphthalene, more than double the amount exported in the corresponding period of 1927 (6,683 tons) but only 70 per cent. greater than the 1926 figure (9,052 tons). The value of the seven months' exports in 1928 was 2,376,000 reichsmarks ($564,000) . Belgium purchased 11,115 tons, the United States 1,590 tons, and China 311 tons. The United States' purchases from Germany in the first seven months of 1927 were 1,045 metric tons. (1 metric ton = 2,204.6 pounds).

Production of crude naphthalene in the United States has increased markedly since 1921 as shown in the following table:

Year	*Pounds*	*Year*	*Pounds*
1921	16,949,000	1925	34,135,000
1922	19,323,000	1926	45,166,000
1923	41,453,000	1927	45,298,000
1924	34,683,000		

The Syndicate of German Soda Factories G.m.b.H. of Bernburg has increased soda prices three per cent., reports Consul General Frankfort on the Main, Germany. Further increases are expected in the entire range of related inorganic products. The reason is said to be the increase in production costs as a result of higher coal prices. A certain over-production exists in this branch of the German chemical industry and, owing to the predominant position of the Solvay concern, it is not possible at present for the German soda manufacturers to export their products.

An agreement has been reached between the Kali-Industrie A. G. of Cassel and the Swedish Nitrogen A. B. which is being liquidated, whereby the former purchases a patent from the Swedish firm and promises to pay under certain conditions 30,000 crowns annually for 10 years.

Rhode Island section, American Association Textile Chemists and Colorists, holds regular monthly meeting, October 26, at the Providence Engineering Society, Providence, R. I. Dr. Eugene Schwarz, General Dyestuff Corp., spoke on "New Developments in Vat Colors."

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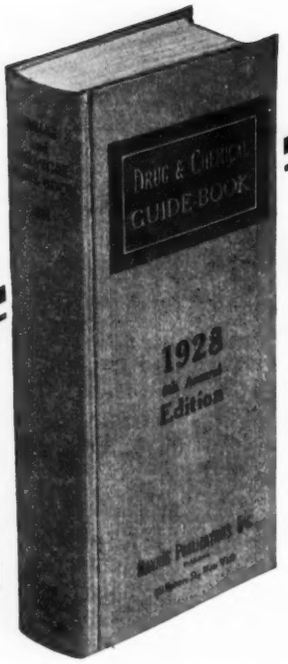

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Canadian Exports of Nickel

Canadian exports of nickel in September amounted to 5,966,900 pounds, valued at $1,375,608, against exports with a valuation of $1,649,865 in September, 1927, first decrease this year. Total value last month included nickel in ore $257,041; nickel oxide $136,172 and nickel fine $982,395.

Decrease was due to reduction in exports of nickel in ore, largely exported by Mond Nickel Co. In nickel oxide and nickel fine there was a considerable increase. These products are largely from International Nickel Co.

During first nine months this year total exports of all grades of nickel were 71,279,100 pounds, increase of 19,739,400 pounds over 1927 period. Export valuation was $15,829,255, gain of $4,734,469.

Operations are again in progress at the carbide works at Electrona, Tasmania. The company is employing 150 men and paying out $125,000 annually in wages, with a liability to the Government of $50,000 a year for electric power. The company is again approaching the tariff board on the question of better protection against the imported product, in an endeavor to ensure a market for all the carbide produced locally. It is proposed shortly to branch out in other directions, including the manufacture of lime and sulfur spray.

France has noticeable increased its consumption of nitrogenous fertilizers, reaching the high figure of 126,000 metric tons (expressed in pure nitrogen content) in 1927, as compared with 109,070 metric tons in 1926, and 73,000 metric tons in 1913. It is estimated that the year 1928 will show a further advance of approximately 25 per cent. French production also registered a marked increase, from 41,700 metric tons pure nitrogen content in 1926 to 53,000 metric tons in 1927 (17,000 metric tons in 1913).

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German Nitrophoska Output Up

The German dye trust has increased production this year of nitrophoska, the chemically "mixed" nitrogen-phosphoric acid-potash fertilizer, to a probable total of 27,000 tons finished product monthly, according to the Department of Commerce.

When the head of the Nitrogen Syndicate announced the appearance of Nitrophoska in December, 1926, he indicated an initial monthly production of 10,000 tons; this has been increased since by 170 per cent., it was explained.

The report follows in full text:

Nitrophoska at Piesteritz is produced by the electro-thermal treatment of phosphate rock over diammonium phosphate. Oppau is using the sulfuric acid method, employing American equipment. Piesteritz has gone over to the standard method of producing phosphorus electro-thermally, collecting the phosphorus and burning it to phosphorus pentoxide which it hydrates to phosphoric acid. It is the general impression that Piesteritz operated the Lilienroth furnace last year.

The Oppau method involves employment of the standard sulfuric acid method combined with an American apparatus, consisting of a counter-current decantation system whereby the precipitated calcium sulfate is separated more easily than by filtration. The calcium sulfate is then used as a substitute for sulfuric acid in producing ammonium sulfate in the same manner that natural gypsum is used for this purpose at the Leunawerke.

Caustic soda is produced in Italy by both the electrolytic and the ammonia soda processes. The ammonia soda plants make the solid product, while the electrolytic plants market caustic soda in solution at 35° Be, although a part of their output is marketed as fused caustic. It is estimated that 5,200 tons of fused caustic soda were obtained in 1926 from the liquid product. Pre-war production of caustic soda was estimated at 3,290 tons solid and 7,660 tons in solution. After the war the capacity of existing plants making electrolytic caustic soda was enlarged and new plants were erected so that the output of caustic soda in solution rose from 21,690 tons in 1919 to 52,780 tons in 1926. Up to 1924 there was only one concern manufacturing solid caustic soda by the ammonia soda process, but in that year the plants of the Soc. Adria at Monfalcone, which had been rebuilt after the war, began operations, and production of solid caustic soda jumped from 7,350 tons in 1923 to 23,470 tons in 1924 and in 1926 to 50,270 tons. The capacity of existing plants in 1926 would permit of an annual production of 80,000 tons solid caustic soda and 85,000 tons in solution.

The Mount Lyell Chemical Works, which in addition to turning out nearly 100,000 tons of superphosphate and other fertilizers yearly, possesses the only electrolytic caustic soda plant in the Australian Commonwealth, has found a use for the surplus chlorine that is generated in the process of electrolysing the salt solution. It is proposed to manufacture calcium chlorate, which has been found to exert a marked destructive effect on weeds. Experiments carried out under the direction of the Victorian Railways Commissioners, states the "Fertilizers and Feeding Stuffs Journal," showed a 100 per cent. kill on weed-infested areas. In addition to being relatively cheaper than sodium arsenite, this material is non-poisonous, non-corrosive and non-irritant to the hands of the operators. It is to be marketed under the name of "Weedex."

August exports of acetone from the United States during the first eight months of 1928 amounted to 306,238 pounds, valued at $25,090, according to preliminary figures by the Department of Commerce.

Most of this went to the United Kingdom, which took quantities worth $15,568; Canada stood second with purchases of $5,017. This brings the total purchases for the first eight months of this year up to $282,503.

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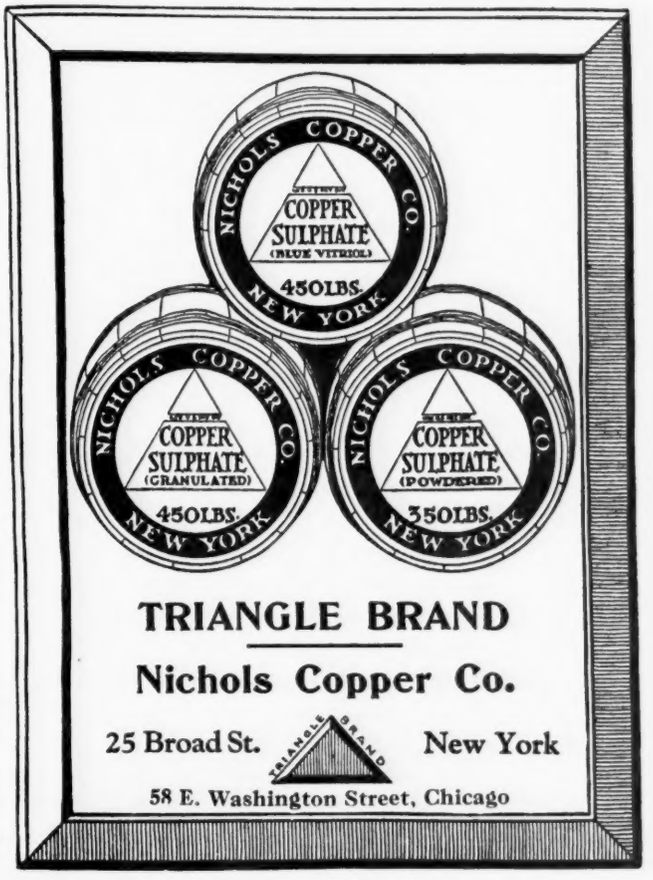

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German Glycerin Prices Off 60%

Prices of glycerin in Germany have fallen 60 per cent. in the last two years, but even with record low prices, exports have fallen off considerably, according to Trade Commissioner William T. Daugherty, Berlin. Only 2,000 tons were exported during the first six months of 1928 as compared with 2,500 tons a year ago. The United States purchased only 41 tons, whereas during the first half of 1927 purchases amounted to 615 tons. The limitations put upon explosives production by the peace treaty have operated to narrow the glycerine market, in addition to the adverse effects suffered from competition with American glycol.

The two German firms producing glycol are the I. G. Farbenindustrie A. G. and the Th. Goldsmith Co. of Essen. The latter company produced some glycol during the war. The I. G. was not inclined to break the glycerin market at first, partly because of its connection with Koeln-Rottweil, a Nobel group interested particularly in dynamite glycerin, and partly because it would have been against its local policy. There are reports of an approachment between the I. G. and the Th. Goldsmith Co.

Glycol was first used only as a solvent, but it is now being introduced into dynamite and is finding other uses.

The agreement concluded between German and Austrian chemical producers provides for a division of European markets as follows: Austria, Hungary, Jugoslavia, Rumania, Bulgaria and Turkey to Austria, with the Czechoslovak, Polish and Western European markets to Germany, the Consul at Frankfort-on-Main, R. W. Heingartner, says in a report made public by the Department of Commerce.

The agreement concerns alum, ammonia, sodium thiosulfate, chrome alum, sulfur choride, Glauber salts, sulufrous acid salts, sodium sulfide and a number of other products. Fertilizers are expressly excepted.

The principal markets thus affected are the Jugoslav and Rumanian, in which previously the Germans and Austrians were competitors. The German negotiator is the I. G. Farbenindustrie of Frankfort, which places at the Austrians' disposition its selling organization in the countries in question.

Large scale manufacture in France of fertilizers from grape residues is being investigated, according to the Department of Commerce.

Fertilizers can be produced from the residues existing after alcohol, tartaric acid and seed-oil are obtained from the fruit. The residues are of three types: Fine vegetable mould emanating from the separation of the pips; pulp constituted in the same manner as the vegetable mould, but not so fine; and pips from which the oil has been extracted.

It is proposed that the fertilizer material should be utilized by the grape growers as base goods to which superphosphate and potash could be added for a high grade mixture.

During the first eight months of 1928, the United States exported 1,000,386 pounds of nitrocellulose and acetocellulose solutions, such as collodion, etc. (excluding pyroxylin plastics and paper stocks), valued at $247,193. England was the best customer, taking materials valued at $82,280, Canada second with purchases worth $77,126, and Germany third, with $24,292. Other countries purchasing appreciable quantities were Chile, Australia, Mexico, and Spain.

According to reports it is understood that a company with a capital of £25,000 has been formed in Auckland to develop the mercury ore deposits near Nghwha Springs, between Ohaewai and Kaikaha.

The I. C. I. are strongly interested in the new concern, which is expected to employ between forty and fifty workers.

American-La France & Foamite Corp. offers a system of carbon dioxide protection against fire, known as the "Alfite System".

Spanish Royal Order on Colors

Among the provisions of a royal order recently issued in Spain relative to coloring products which shall be considered as of national manufacture are the following:

1. "There shall be considered as products of national manufacture all of those included in the list accompanying this Royal Order, said list to be subject to changes as circumstances may require.

2. "Authorization is granted for the importation of samples, containing coloring products each weighing up to 250 grams, provided the necessary permission for importation has been requested and granted and the corresponding duties paid, said importation not requiring the presentation of samples to the Junta.

3. "In order to avoid any abuse in importation rights, it is required that as soon as the manufacture of a new coloring product is reported by the Junta to the Central Commission, said product shall be added to the list and the inclusion mentioned in the Gaceta, the permission granted for the importation of said products expiring on the date of inclusion in the list of national manufactures, exception being made for those shipments which can prove their departure from point of origin to have been previous to the publication of the aforementioned inclusion in the Gaceta."

The Gaceta of September 7 contains the list of coloring products considered as of natural manufacture on pages 1349 to 1356, reports Commercial Attache Charles A. Livengood, Madrid.

The German potash industry produced in 1927 approximately 11,070,000 metric tons of crude potash salts with a pure potash content of 1,519,000 tons, according to the Department of Commerce.

This production was almost 18 per cent. more for crude salts and 20½ per cent. more for pure potash than in 1926. Production during 1927 was supplied by an average of 60 out of 226 German shafts, against 66 in 1926.

Sales by the potash syndicate in 1927 amounted to 4,277,000 tons effective weight of salts (reduced from the crude) with 1,239,000 tons K20 content.

Germany agriculture took almost 63 per cent. of the 1927 production and export sales accounted for the remainder. The leading foreign customers in the order of their purchase were: United States, the Netherlands, Great Britain, Poland, Czechoslovakia and Sweden.

A survey of the domestic dye and synthetic organic chemical industry is being prepared by the United States Tariff Commission.

The survey will represent the results of a special investigation made by the Commission with respect to the production in the United States of coal-tar dyes and synthetic organic chemicals, both of coal-tar and of noncoal-tar origin, it was pointed out.

The survey will include a detailed tabulation of coal-tar dyes imported into the United States and also official statistics of imports and exports of coal-tar dyes by the large consuming and producing nations of the world.

Imports of synthetic dyes in September reached the lowest point touched since January, 1927, totaling 257,295 pounds valued at $240,132, against 389,957 pounds valued at $317,879 in August, and 396,432 pounds valued at $325,338 in September of last year, according to figures compiled to-day jointly by the Department of Commerce and the Tariff Commission.

For the nine months ended with September, however, imports showed an increase of over 700,000 pounds, totaling 3,771,329 pounds valued at $3,038,270, against 3,045,036 pounds valued at $2,523,163 for the same period last year.

Horace W. Davis, president, Agfa Ansco Corp., Binghamton, N. Y., is on a visit to the I. G. headquarters in Germany.

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CHICAGO

General business conditions in the Chicago territory continued to show marked signs of improving during the month of October and this condition is largely true of the chemical industry as well. Hand in hand with the improvement in chemical conditions has been a resultant advancing in many prices. As in other sections of the country, stearic acid, red oil and alcohol are the most active items on the list and are characterized by strong markets. While these three are outstanding from the point of view of activity the whole chemical list is in a good position. Collections are good.

BOSTON

The general conditions in New England seem to show marked improvement. This is particularly true of the textile industry. Most of the woolen mills are operating at full capacity, and many are running both day and night. Market prices are generally firm. Stearic acid and wood alcohol have both advanced very sharply, due to a short supply. Collections seem to be slowing up, and business houses generally are complaining about the difficulty in collecting their bills promptly.

ST. LOUIS

Business generally was very good during the early part of October, but fell off somewhat during the last two weeks. According to information from the buyers, this falling off was due to the proximity of election and it was not expected that business would pick up until after November 6th. The linseed oil market has been slipping off, but indications are that the price has reached rock bottom and is due for a rise. Naval stores have also been weak, turpentine having declined very decidedly. Relatively few contracts have been made this past month, most buyers choosing to hold off until November or December. Stearic acid continues to be very strong having advanced 1c per pound during the month. Castor oil continues firm, having advanced ½c per pound. Collections continue fair.

CLEVELAND

There has been no change from last month in business conditions in the Cleveland and Northern Ohio territory. General business is exceptionally good. The iron and steel companies are running at practically full capacity, which is also true of the auto accessory concerns. The paint, varnish and chemical industries here are very active with a very heavy demand for their products and this is particularly true of the lacquer manufacturers. There is at present a scarcity of

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toluol and the buyers are searching the market for supplies. The tank car price of toluol advanced from 35c to 40c per gallon, f.o.b. shipping point. Benzol is also scarce.

Denatured alcohol remains very firm. Glycerine has advanced ½c per lb. to 15½c in drum lots. With cold weather coming on there will probably be further advances in glycerine and alcohol.

NEWARK

In the chemical and color trades stocks are normal ; orders for goods are only fair and the increased business that was anticipated a month ago has not developed. Collections are fair but some feel they could be somewhat improved. There has been a drop of about 5% in the sales of leather for October as compared with September. November sales are expected to be about the same as October, but it is anticipated they will be better than they were for the corresponding period a year ago. Collections in this line are not entirely satisfactory, and the usual end of the year slowing up of business is to be anticipated. An extreme scarcity of toluol, benzol, etc. has brought a terrific strain upon producers and distributors of solvents, causing sharp advances in prices, in addition to which new markets seem to be developing for these products and the tendency is for strong demand and high prices for the immediate future. There seems to be a slight improvement over a month ago in the textile field. Efforts on the part of some to create interest in some of the heavier textiles seems to be producing some good results, although the situation is none too encouraging. The unemployment situation is not serious.

PHILADELPHIA

Announcement from the alkali producers that their schedule on bleaching powder, soda ash, caustic soda will be the same during 1929. seems to have strengthened the market on these items and also give the consumers of them more confidence to go in for contracting and for themselves to go out and get business.

Other items such as copper sulfate, naphthalene, prussiate of soda, chlorate of soda, trisodium phosphate, lead acetate, and all items along this line were steady and in fairly good demand. Naphthalene particularly at this time is active on account of one of the large producers naming the 1929 price which is the same as 1928 and are now actively soliciting contracts for next years delivery. The industries as a rule are all fairly busy.

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"WE"—Editorially Speaking

Charles M. Schwab long has been an outstanding figure in the fight against price cutting. In a speech delivered before the American Iron & Steel Institute in session at New York, he again came out against this greatest of modern day business evils.

In leading up to the subject, Mr. Schwab cites price cutting as one of the three evils of all business. His thoughts on its correction are both constructive and feasible. He berates the pernicious habit of some manufacturers in endeavoring to force their way into their competitors "back yards" by the simple expedient of quoting a figure lower than that quoted by the logical supplier, and in addition assuming the burden of a much larger freight rate, which obviously cuts further into the profit—if any remains after the price war has been won. This, says Mr. Schwab, can but lead to one end.

It is true that Mr. Schwab speaks of, and to, the steel industry, but for practically every instance he cites, a similar condition can be found to match it in the chemical industry. In fact, the substitution of the word "chemical" for "steel" makes the glove fit perfectly.

Will wonders never cease! A member of the chemical industry in the person of James McD. Murphey, assistant manager of the Solvay Sales Company's Chicago office, has taken time by the forelock and chartered an airplane with which to call on his customers in isolated sections of Wisconsin. Immediately on receipt of the announcement of the 1929 chlorine contract prices, Mr. Murphy hired his airplane, flew to his customers in Wisconsin, and in one day signed more business than would have been possible via the ordinary methods of railroad or motor in several days. The surprising part of the entire incident is that the financial outlay involved did not exceed that of the ordinary sales trip through the same territory and had the advantage of saving considerable time. What next?

If we were to display the same reticence in accepting the inevitable on a question of production costs that we do in adopting modern means of fire prevention, there would not be a need for insurance as our plants would soon be scrapped. Mr. Russell estimates that the loss by fire in this country has exceeded $500,000,000 in the past five years a large portion of which was avoidable. He makes a very good point in saying that a concern is fortunate indeed to sustain a loss by fire and still be able to carry on without loss—even when fully covered by insurance. Few indeed are the instances of complete recovery from devastating fire losses. In some instances it effects the life of the entire community in which the plant is located; it may wipe out the work of years of research; it may come at the height of a production season, to so cripple an organization that it may never recover its place in the industrial picture.

Investment trusts and what they stand for are admittedly something of a mystery to the average business man. This is not surprising, as they are something of a development of this modern age. In a previous article on the subject, Mr. Switz outlined the functions of these organizations and in this issue he offers suggestions as to how the chemical industry may gain financial aid through co-operation with these trusts and the investing public.

DECEMBER FEATURES

A general survey on the subject of "Depreciation and Obsolescence in the Chemical Industry" is being prepared for us by Howard Berry of the Mathieson Alkali Works.

Alan A. Claflin will continue his story of "War Time Chemical Progress and Peace Time Chemical Products."

Several of the more important addresses at the forthcoming Second Bituminous Coal Conference at Carnegie Institute of Technology which are of interest to the chemical industry will appear in full.

In addition, at least one appropriate article for our newly organized Plant Management section will be published.

First and foremost Mr. Switz decries the policies of some of our largest corporations—not only in the chemical field—of endeavoring to impress the average stockholder with a maze of figures under the guise of an "annual report." It is Mr. Switz's contention that a prospective investor is primarily interested in what a company makes, how it makes it, the profit per unit and how it classes with competing commodities. This is particularly true in this day of diversification within an organization. Is it not fair that the stockholder know that two or possibly three or four items are carrying the burden for the less successful items? While the chemical industry has improved in this question of financial information to its stockholders, it still has a long way to go. Have we not the example before us of the benefit derived from the interchange of information on manufacturing, production and shipping? Does anyone doubt that benefits to a like degree would be derived from a similar move in our finances?

As brought out in the October issue, there are some amongst our plant superintendents who are satisfied to look on gauging and sampling as thoroughly routine jobs. Having read Mr. Shapleigh's article last month on gauging and again this month on sampling, we are sure that were we plant superintendents, we would have a wholesome respect for the dangers encountered on these jobs. The Hercules Company apparently has taken great pains to assure protection for their employees while sampling and Mr. Shapleigh's discourse is interesting as well as instructive.

It is not surprising that the Eastman Kodak Company—noted for its progressiveness—insists that every labor employee, regardless of the position filled, be thoroughly schooled in the proper things to do in the event of an emergency arising in the course of his daily work. Periodic classes in safety are held, and compulsory attendance at these classes at least once a year is required. As a result, the employees of the Eastman Company are well groomed in the manner in which to conduct themselves in the event of an emergency. The results obtained are apparent in the figures of time lost in the various hazardous departments.

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